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ABSTRACT

This book evolved from a conference convened to address critical issues in the education of children and youth with autism (Reston, Virginia, February 1980). Fourteen papers deal with critical issues in the education of autistic children and youth from perspectives of administrators, teachers, parents, researchers, and program developers. B. Wilcox provides an overview and E. Sontag et al. present an introduction to the volume. The following titles and authors are represented: "Organization of Education Services for Autistic Children and Youth" (J. Olley); "A Developmental-Behavior Model for the Prescriptive Evaluation of Autistic and Severely Socially Impaired Children" (C. Lord and P. O'Neill); "An Educational Perspective of Autism: Implications for Curriculum Development and Personnel Development" (A. Donnellan); "Programming the Delivery of Instruction for Autistic Children" (G. Dunlap and R. Koegal); "Generalization of Treatment Effects Following Educational Intervention with Autistic Children and Youth" (E. Carr); "Reducing Behavior Problems in the Classroom" (G. LaVigna); "Teaching Functional Language" (A. Schuler); "Social Behavior Programming with Severely Handicapped and Autistic Children" (P. Strain); "The Teacher's Perspective: The Struggle to Provide Quality Education to Autistic Children" (K. Morsworthy and P. Sievers); "Behavioral Teaching with Young Autistic Children" (O. Lovaas); "The Evolving Parent-Professional Relationship" (J. Kyne); "Secondary Education for Severely Handicapped Students: Guidelines for Quality Services" (G. Bellamy and B. Wilcox); "Issues in the Provision of Community Services" (D. MacCoy); "Future Directions in Educational Planning: The Problem Is the Problem, and It's Real" (F. Warren). R. Thompson concludes with an afterword. (CL)

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Wilcox and Thompson, Eds.

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CRITICAL ISSUES IN EDUCATING AUTISTIC CHILDREN AND YOUTH

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and
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Editors

U.S. Department of Education
Office of Special Education
November, 1980

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PREFACE

On February 6-8, 1980, in Reston, Virginia, the Bureau of Education for the Handicapped (now the Office of Special Education of the U.S. Department Of Education) sponsored an "invisible college" to address critical issues in the education of children and youth with autism. The conference was an expression of the Office of Special Education's interest in the incorporation of existing models and technology for severely handicapped students into classrooms serving autistic students.

Rather than focusing on a particular aspect of autism, the conference attended to a wide range of interests and expertise within the general field. Participants included those who are generating new information and those who are responsible for translating that information into classroom applications; those who are responsible for organizing and supervising classrooms for autistic and other severely handicapped students; those who prepare personnel to staff those classrooms and programs; and those who confront the problems most intimately in having an autistic child within the family group.

The conference was an educational experience, and this volume represents a recapitulation of conference issues. As such, it is a comprehensive and contemporary discussion of the problems and practices of providing services to children and youth with autism.

Many have helped in the preparation of this volume. Special thanks are due to the staff of International Business Services, Inc., who played an important role in conference arrangements and assembly of the final monograph. Appreciation is extended to Judy Smith for her editorial work, to Andrew Egel for his early assistance in conference planning, and to Hal Benson, Executive Director of the National Society for Autistic Children, for his ongoing assistance.

Special thanks are in order for Ed Sontag, Director of the Division of Innovation and Development, Office of Special Education, for his long-standing concern and responsiveness to issues involved in the education of severely handicapped children and youth; for R. Paul Thompson, Chief of the

Division's Special Needs Section, for his support of the project; and for Pat Hawkins, Project officer, and Peggy Norris, Contracting Specialist, Office of Special Education. Finally, appreciation is extended to the chapter authors and other conference participants for their insight and their contributions.

B. W.
A. T.

Note: On January 16, 1981, the Office of Special Education, U. S. Department of Education, published a technical change in the Regulations of PL 94-142 which removed autism from the category of "seriously emotionally disturbed" and lists it as a separate sub-category under "other health impaired."

It is listed as follows: "Other health impaired" means (i) having an autistic condition which is manifested by severe communication and other developmental and educational problems; or (ii) etc. (no change in the remainder of the "Other health impaired" category).

This action addresses many of the issues raised in the subsection "A Separate Category" beginning on page 294 of this volume.

F.W.

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OVERVIEW

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This book deals with critical issues in the education of autistic children and youth. Contributors were selected to represent a full range of roles and to raise a broad spectrum of educational issues; each has addressed the general question of program quality from his or her own perspective. The result is a volume that should provide a variety of readers -- administrators, teachers, parents, researchers, and program developers -- with a sense of the important new directions being taken to provide quality services to people with autism.

In the Introduction, Button and Thompson describe the overall goals of the conference from which this book evolved, and provide a context for much of what follows. Arguing that "autism" means different things to consumers and providers at different points in the educational service system, they maintain that quality services for children and youth with autism can be achieved only if all concerned parties constructively contribute their relative expertise toward a common solution.

The chapter by Olley focuses on the variety of organizational and administrative features that are necessary to serve autistic students. Stressing the heterogeneous learning and performance levels of students with autism, he advocates a variety of service delivery options, inlcuding regular class placement with support services and placement in generic "severely handicapped" classrooms.

The chapter by Lord and O'Neill focuses on a problem of considerable difficulty: designing and implementing a functional assessment for autistic students. Their system stresses the need for careful observation of the child in natural environments, rather than in artificial testing situations, and emphasizes educationally relevant assessment.

Donnellan's chapter on curriculum presents a departure from traditional curriculum design for autistic students. The author presents a critique of the status quo of educational services for children with autism and argues for major changes in curriculum, service delivery models, and teacher preparation. Drawing on the work of Brown and his colleagues in Madison, Wisconsin (e.g., Brown, Branston, Hamre-Nietupski, Pumpian, Certo, and Gruenewald, 1979; Falvey, Brown, Lyon, Baumgart, and Schroeder, 1980), Donnellan proposes that curriculum activities be functional for the student and referenced to actual demands of the natural environment. As an alternative, the chapter outlines a curriculum development approach based on an environmental inventory strategy.

The chapter by Dunlap and Koegel reports results from a series of studies on the learning characteristics of autistic children. The findings they present have obvious application to the design of effective instructional delivery formats. Carr's chapter carries another important message for teachers and others working with severely handicapped students: skill acquisition is meaningless without maintenance and generalization. While this message has also been articulated by others (e.g., Stokes and Baer, 1977; Warren, Rogers-Warren, Baer, and Guess, 1980), Carr describes classroom implications from more general research findings.

LaVigna's chapter on behavior management deals with a topic that is probably familiar to most special educators but which may present a special set of problems for teachers, parents, and program administrators who serve more severely handicapped students. LaVigna argues for administrative guidelines on the use of punishment procedures that employ aversive stimuli, and emphasizes the need for management procedures with validity for classroom application.

The problems of teaching functional language to autistic students are presented in Schuler's chapter. While not denying the importance of vocal language skills, Schuler suggests that there has perhaps been an over-emphasis on training vocal language, with the result that alternative, non-verbal communication procedures have not been fully explored. She reviews language research and presents a critical review of current language training practices. Throughout, the emphasis is on the need to focus on the development of functional communication rather than language per se, and the range of decisions related to language training with severely handicapped individuals is also addressed (Sailor, Guess, Goetz, Schuler, Utley, and Baldwin, 1980).

Despite the fact that social isolation is a defining feature of children with autism, relatively little professional attention has been directed to procedures for social skills development with these students. The work of Strain and his colleagues is a notable exception. His chapter presents a comprehensive overview of social interaction research with autistic and other severely handicapped children, and highlights the benefits and shortcomings of various intervention approaches. While to certain educators, the feasibility of direct classroom application of some of the findings may remain questionable, the review nonetheless sets the stage for further work in an important curriculum domain.

Norsworthy and Sievers make clear that the job of teaching severely handicapped students is extremely complex: program evaluator, curriculum developer, parent programmer, and inservice coordinator responsibilities are frequently added to the more traditional teaching role. The authors discuss the particular problems presented by students with autism and identify various job-related hazards facing their teachers. They emphasize that the job of providing quality education to autistic children and youth could be made more manageable if research yielded a technology with actual classroom applications, if school administrators would dispense more frequent reinforcement and support, and if university training programs would initially develop the requisite teacher competencies.

The chapter on early intervention describes the current focus of one of the nation's pioneer long-term research projects for autistic children. Lovaas presents the background for the project and describes its general operation and the curriculum employed. Perhaps the most exciting material Lovaas includes is follow-up data on the effects of the early intervention efforts. The results of his intensive treatment group certainly hold encouragement for future generations of children and underscore the impact of intensive early intervention.

Kyne's chapter explores the role of parents in developing quality educational programs for their children with autism and other severely handicapping conditions. The author identifies the host of impediments to the elusive parent-professional partnership and discussess how they might be removed through the processes of the individualized education program. Speaking as both a special education teacher and as the mother of an autistic child, Kyne presents a sensitive picture of the strengths and vulnerabilities of each role and points out that, rather than becoming complacent with the changes effected by Public Law 94-142, parents must now turn their energies to the establishment of living and working opportunities in the community as an alternative to post-graduation institutionalization.

Perhaps no facet of special education has been more neglected than programs at the secondary level. Conference participants repeatedly identified the dearth of appropriate secondary school services as a major problem. Bellamy and Wilcox set out to delineate features that should characterize quality programs for severely handicapped high school students. They follow this standard-setting with a discussion of the implications for curriculum, instructional methods, classroom organization, and administration.

In his chapter, MacCoy describes an exciting alternative for the design and delivery of community-based services for handicapped adults. He details the development and operation of a non-profit corporation that brokers necessary human services for individuals returning to their home communities from a local institution. The evaluation data available to date are encouraging and suggest that a brokerage model may be viable for community living efforts in the United States.

In some ways, the chapter by Warren is both an introduction and a conclusion. He begins with a treatment of the definition of autism and follows with a general review of research in the field and a discussion of its implications, then moves to a discussion of larger systems issues. The author warns that the passage of Public Law 94-142 is not in itself enough to ensure quality services to children and youth with autism, that there must be rigorous enforcement of the law, continuing effort to develop functional assessment procedures and curricula, expanded teacher training, and increased development of community resources. Finally, Thompson's Afterword concludes the volume with a restatement of the federal commitment to the provision of effective, reality based, lifetime services to autistic individuals, and an emphasis on promoting the individual potential of each autistic child.

Despite the diversity of roles and interests represented in these chapters and at the conference, a common set of points was raised, reiterated, or underscored by virtually all presenters and commentators:

1. The "criterion of ultimate functioning" is the same for all handicapped children. Regardless of whether they are called autistic, severely retarded, or multiply handicapped, each must be prepared to function as independently as possible in residential, vocational, and leisure settings in their own communities.

2. Integration must be a basic feature of services. Autistic-only or handicapped-only schools or services work against the need to learn to cope in a community that is integrated.

3. Education should target functional objectives to be trained in natural and age-appropriate settings. Curriculum materials as well as instructional methods are in need of extensive social validation.

4. The dissemination of existing best practices should be a high priority. The refinement of techniques and demonstrations into standard intervention models may do much to close the existing gap between knowledge and practice so often observed in services to autistic individuals.

5. The teacher is the critical element in realizing quality educational programs. Good teachers need good training and strong administrative supports.

6. The vacuum in secondary education and adult services presents major obstacles in achieving least restrictive living after the school years. This must be changed if important gains made during the school years are to be maintained.

Each of these concerns addresses some aspect of the more pervasive problem of program quality. The goal in the decade ahead must be to provide quality educational programs to all autistic children and youth. The goal of this book is to provide the most advanced current thought and work in this direction.

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INTRODUCTION

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Professionals in special education have approached the education of autistic youngsters in diverse ways, groping for answers with only pieces of knowledge. Some utilize methods that emphasize communication training, others stress a developmental model, while still others believe learning principles provide the most appropriate educational solutions. Some of us are parents, administrators, or practitioners; all of us are struggling to discover how best to educate these children. As part of the federal research and development effort, we have the task of attempting to integrate available knowledge and approaches for the purpose of providing optimal educational experiences for handicapped children.

It was our hope that the conference would provide a forum for the participants to present their views on autism and suggest educational strategies that reflect those views. Collectively, the participants represent the forefront of research and technological expertise in the field. Their presentations have been collected to summarize the state of the art in educating autistic children.

The conference was designed to achieve two ends. The first was to share substantive information on major topical issues related to autism. The second was to provide for the general exchange of ideas and concerns among the participants, representatives of the federal government, and Board members of the National Society for Autistic Children. The contents of this document attest to the degree to which the first purpose was accomplished. The accomplishment of the second purpose may well be reflected in expanded communication and understanding among these individuals over time.

The conference itself was one expression of the federal commitment to the education of children and youth with autism. In the past, the U.S. Office of Special Education (formerly the Bureau of Education for the Handicapped) has funded projects under the Handicapped Children's Early Education Program which specifically included autistic children. The 1978 Handicapped Children's Model Program grant application contained an established priority to support programs serving severely handicapped children and adolescents, including the autistic. The Research Projects Branch of the Division of Innovation and Development has awarded grants for the investigation of specific areas relating to autism, including language development, sensory-motor development, and behavior management procedures. Most recently, the Division's Special Needs Section has invited proposals for designs of model programs using innovative methods within integrated school environments for educating autistic children and youth.

Even with the impact of Public Law 94-142 and our continuing efforts to develop programming for autistic children through the support of model educational programs, we are aware that a staggering number of autistic children are still not receiving an appropriate education and, further, that the large number of autistic individuals who remain in institutions or ultimately require extreme supervision and care presents a distressing picture. There is evidence to indicate a correlation between adjustment to society and duration of the educational intervention. To maximize the probability of adjustment, it is essential to provide quality education that begins in the earliest years, continues through secondary school, and is maintained intensively into early adulthood. We must also begin to develop educational strategies whose effects will prevail not just for one academic year but for an entire lifetime. Despite our best intentions, we are hampered by gaps in our knowledge of what constitutes an effective education. When knowledge is available, there is often a lack of dissemination in forms useful to educational practitioners. With this in mind, the Office of Special Education is continually soliciting input from the field in order to determine future program priorities.

Ed Sontag, formerly Director of the Division of Innovation and Development, (and, more recently, Acting Director of the Division of Assistance to States), has articulated six assumptions that should underlie the design of educational services for students with autism or other severe handicapping conditions. His first point is that it may be inappropriate and imprudent to establish any one approach or concept as the example of best educational practice. What seems to be more logical is to highlight a range of best practices and, thereby, to provide an arsenal of varied strategies that can be brought into play as the situation demands.

A second and related point is the idea that we are working with individual children, not with a category. If we can perceive this category as representing many unique and individual characteristics, we are more likely to generate productive solutions to their needs.

Third, we need to think of severely handicapped children as members of society who should have the greatest possible interaction with nonhandicapped individuals. The language of Public Law 94-142 and the regulations developed to implement it do not mandate integration of handicapped children. Nevertheless, we agree with Gilhool and Stutman (1978) that the spirit and intent of the law argues for an integration imperative. Basically, Gilhool and Stutman's position is that segregated or handicapped-only settings are inconsistent with Congressional intent and findings of fact as indicated in the legislative history of the enactment. It is our feeling that segregated facilities are, at best, restrictive alternatives and that the standard of the least restrictive environment should be the public school.

Fourth, Sontag recommends that the concept of a "criterion of ultimate functioning" should be given considerable attention. According to Brown, Nietupski, and Hamre-Nietupski (1976), the concept

> . . . refers to the ever-changing, expanding, localized, and personalized cluster of factors that each person must possess in order to function as productively and independently as possible in socially, vocationally, and domestically integrated adult community environments. Since severely handicapped citizens will ultimately function in settings which contain less handicapped and nonhandicapped citizens, the majority of the developmental environments to which most severely handicapped citizens are now exposed will have to be changed substantially. (page 118)

It is currently estimated that 95 percent of all autistic children in the nation will spend their adult lives in institutions. The elimination of this institutionalized percentage must be our goal for the future. Stated another way, autistic children must be provided the comprehensive and long-range educational experiences that are directly and systematically related to providing them with the skills and abilities necessary to function in many heterogeneous community environments as adults.

The Office of Special Education is now supporting attempts to develop programs for autistic children in the least restrictive environment. Our primary concern is with programming that will facilitate entrance into schools containing nonhandicapped chronological age peers. A major related commitment is the educational technology necessary to enhance their development in these environments. Efforts that seem to be reasonable steps toward reaching these objectives will be considered the higher priority. Efforts that are only remotely or tangentially related to these objectives will be considered useful but of lower priority.

Sontag's fifth assumption is that we need to adjust our thinking about learning, moving away from the concept of limitations and toward the idea of expansion. Sontag, Certo, and Button (1979) summarized recent research supporting the view that handicapped students can learn at higher levels than previously expected, and they advocate the active expansion of the boundaries of our current expectations. Low expectations and limited programming for children with autism can lead only to the self-fulfilling prophesy of institutional placement.

Sontag's final point emphasizes the importance of innovation. There is a distinct need to become involved in "practice-stretching activities" -- the creative arrangement of information to generate more efficient or effective methods and approaches. Good educational practices in terms of accepted services to children emanate from innovative methods; the innovations of today become the "best practices" of tomorrow.

There is one further concern that should be emphasized. Some educators feel that a major campaign was won with the passage of Public Law 94-142, while others feel that the campaign was only initiated with the law's passage. We include ourselves in the latter group and believe that the strength of legislation resides in its implementation, rather than in its enactment. The passage of legislation or the proclamation of a judicial decree are paper promises that must be transformed into reality through the continued vilgilance and commitment of all of us.

At a somewhat different level, we also have to contend with the concerns of both the general public and the public's elected officials. Public demands are neither complex nor unreasonable, but continue to press special educators on two questions that were set forth in a New York Times editorial (April 17, 1979): is special education effective, and are the procedures currently being used as cost-effective as possible? We must begin to pay closer attention to these questions and, more important, to the answers.

It is our hope that the conference whose proceedings are reported in this book will encourage professionals in the field of autism to become less an aggregate of individuals with diverse positions and more a group of individuals who recognize the need for a variety of strategies to meet a variety of needs. Hopefully, there can develop a shared perception or agreement on the overall needs of autistic children, with recognition not only that our individual perceptions are different but also that the children we are serving differ from one another. We must come to terms with a group of children who may share a constellation of common characteristics but who are, in the final analysis, individuals with unique and differing requirements. We must view autism as a construct and realize that, outside the conference room, teachers must deal with variety and individual differences -- no matter how a child is labeled. The issue is not whether John has 452 of the 576 characteristics as described in the literature on autistic children but, rather, how educational environments can be arranged over time so that John can be the most independent and productive citizen possible.

In the last few years, we have witnessed the divisive hostility and bitterness created by vested interests and inflexible positions. Mutual exclusion and segregation have come to characterize groups who should be natural allies on many issues.

Unfortunately, these effects can characterize the interactions of researchers, educators, parents, advocates, and bureaucrats as well. People with fundamentally similar interests find themselves at odds.

The idea of "community" is an inherently powerful concept that engenders the thought of friends and neighbors. We would hope that this concept would emerge as a function of this conference. The transformation of parents, educators, researchers, and practitioners into a community of friends and colleagues would be no small feat. Friendship and a feeling of community take time to develop and grow strong. It is therefore appropriate and important to start building now.

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ORGANIZATION OF EDUCATIONAL SERVICES FOR AUTISTIC CHILDREN AND YOUTH

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In the past few years there has been a great increase in public awareness regarding the problems and needs of autistic children and their families. The role of educational, medical, recreational, and other services is more clearly recognized. As parents, service providers, advocates, and other agencies and individuals work toward improved services, these efforts must be coordinated within a carefully planned system of services. There is not wide agreement on what this system should look like, but it is clearly determined by law that the public education system in each state must be a central agency. Thus, we must determine what the role of the schools is to be and how educational services will fit into a comprehensive service plan. Without such organization, the best instructional efforts of teachers and others will be greatly diminished. In order to determine the best organizational approach to educating autistic children, one may first consider the nature of the problems posed by autism, the goals, and the obstacles.

IS AUTISM A MEANINGFUL CATEGORY FOR EDUCATIONAL PURPOSES?

Although autism as a category of childhood disorder has been with us since 1943 (Kanner, 1943), and there are several current and widely accepted definitions (e.g., National Society for Autistic Children, 1978; Rutter, 1978), confusion regarding autism and the appropriate uses of the label is still great (Schopler and Rutter, 1978). The early conception of autism as an emotional disturbance has been discarded by nearly all professionals (Rutter and Schopler, 1978); however, most states continue to administer their educational services for autistic children under the category of "emotionally handicapped" or some similar label. This administrative structure has the unfortunate effect of perpetuating some outdated views of the nature of autism. For instance, parents and professionals associated with autism have worked for years to change the view that autism is caused by inadequate or inappropriate parent behavior or that the learning problems of autistic children are caused by emotional problems. One can, therefore, understand why parents do not want their children labeled emotionally disturbed or educated in a class for the emotionally disturbed.

Since the children with autism in public schools are not counted separately, the data that state agencies collect and report to the federal government regarding the number and categories of children served do not include autism, and accurate data on the prevalence of the problem among school-aged children, the number of children served, unserved, or inappropriately served cannot easily be obtained. Few people have believed in recent years that funds designated for the education of emotionally disturbed children have actually provided adequate services for autistic children. But some services are clearly improving as misconceptions about autism are changed. For instance, Kanner's (1943) original description of autism indicated that such children "are all unquestionably endowed with good cognitive potentialities." As later years led to a broader conception of autism, this view changed, and most autistic children were seen as severely handicapped and functioning at a moderately to severely retarded level. Thus, as funds and services for severely handicapped children became more widely available in the 1970's, many assumed that autistic children were being served under this designation. Although there are not adequate data to answer this question for certain, many parents of autistic children have believed that their children have been left out of or inadequately served in both the emotionally disturbed and the severely handicapped programs. If this is the case, one clear solution is to establish a new educational category of autism.

A separate category of autism for educational purposes has been a popular idea. The idea has become even stronger in reaction to the inclusion of autism under the category "seriously emotionally disturbed" in the regulations for Public Law 94-142. Such a change has some clear short-term advantages and some less clear long-term risks. Both should be examined closely before such a change is made.

One immediate benefit of using the label "autism" for educational planning is that it would highlight the needs of a group of children who have been inadequately served in the past. Funds could be specifically channeled for services to autistic children, and more accurate data could be collected by state agencies on the number of children served. This focus would also create a pressure to prepare teachers, school psychologists, speech pathologists, and other personnel to gain specific skills applicable to autistic children. There is one other effect that is harder to measure but which may be very important. A separate label of autism would remove from children and their parents any stigma associated with the term "emotionally disturbed." It would be a clear message from the education community that the mandate of P. L. 94-142 to work with parents is a top priority and that parents are seen as partners in the educational process rather than as the causes for their children's disorder.

DOES A SEPARATE CATEGORY MEAN SEPARATE SERVICES?

A separate category has other implications which are difficult to evaluate. The notion of a separate educational category of autism immediately brings to mind an image of separate classes of autistic children and a separate state bureaucratic structure. With a disorder of such low prevalence, this approach may be impractical as well as unnecessary. The association of autism with emotional disturbance, severely handicapped, developmentally disabled, or any other broader category has always had the appeal of joining forces to form a larger group with common interests to advocate more strongly. These alliances do not always bring the benefits they promise, however. Those with a specific interest in autism must consider the benefits of large numbers vs. the diminished visibility within a larger group.

When planning for educational services, the most logical allies of autistic children would seem to be those who serve the severely handicapped. This group is made up of several low prevalence conditions (e.g., deaf-blind, severe cerebral palsy, etc.), and, in fact, an interest in autism is already quite evident within the Association for the Severely Handicapped. Educators in this area have made great progress in the past few years in developing curricula, teaching methods, and teacher training programs, most of which are quite applicable to autism.

Whether or not a separate educational category of autism becomes widely accepted, these accomplishments should be examined and applied whenever possible to the education of autistic children. To begin from scratch to develop special autism curricula, teaching methods, materials, and teacher training programs would be to waste valuable time. In short, if a separate educational category of autism will assure a free appropriate education in instances in which that is not now provided, it will be a positive step. Such a move should not, however, create a large new bureaucracy or separate services to autistic children unnecessarily.

If a separate category of autism is used, those responsible for educational services should follow the same approach followed for other exceptional children. They should first ask what services the individual child needs. If these services are presently available for the child, the next steps are obvious. Only if services are not available should separate services designated specifically for autistic children be needed. This approach emphasizes individual needs rather than categories and is based upon the following assumptions:

1. Autistic children are highly individual in their behavior and their needs. No single educational model will be suitable for all children. The necessary provisions for structure, developmentally appropriate tasks, communication training, social opportunities, behavior management, etc., can be made in many settings. Thus a range of services from separate self-contained classes for autistic children to placement in a regular classroom must be available.

2. An autistic child will benefit more from a class in which he/she comes in contact with a variety of other children and adults than from a class of all autistic children. In order to assure education in the least restrictive setting, it makes sense to educate autistic children in already existing special education classes in public shools where opportunities for wide social contact are greatest. Although most autistic children will spend all of their school years in self-contained special education classes, opportunities for contact with other children, including nonhandicapped piers, should be maximized. Therefore,

to the extent possible, autistic students should use the same school facilities that all children use (e.g., playground, gym, toilet, cafeteria).

3. The basic components of good education f[illegible]utistic children are not different from those needed for other exceptional children, thus, the unique needs of an autistic person can often be addressed in an existing class. If some, but not all, of the necessary elements are available, existing services might be changed to serve one or more autistic children without interfering with services to other children. Adding an aide to a classroom, providing inservice training and/or regular consultation for a teacher, purchasing new materials, or other changes in an existing class may enable a school system to provide for autistic children without the more extreme step of establishing a separate class for autistic children.

GOALS OF A PUBLIC SCHOOL EDUCATION

The operations of an educational system are dictated by certain goals, and the broad goal of education of autistic students is the same as that of all public education: to prepare students for adult life. Whereas adult life for many autistic persons still means a confined existence in a state or private residential facility, there are increasing opportunities for autistic adults to live in group homes or other community based living arrangements which allow as much independence as the individual can achieve.

Community-based living opportunities are new and not widely available for autistic adults; thus, too little is known about the skills that should be taught to prepare a student for such a future. This is an area in which future research and demonstration will tell us a great deal. For the present we must emphasize a basic skills curriculum similar to that offered to other severely handicapped children and be sure that it is carefully individualized to the developmental level and the unique pattern of skills of the autistic student. The curriculum for the younger ages which stresses social and communication skills, with explicit structure and management of behavior problems must evolve into a curriculum for the older child that emphasizes vocational activities and independent behavior.

COORDINATION AND CONTINUITY OF SERVICES

Even the most exemplary classroom will be limited in its effect if there is not coordination among service providers and continuity of services across settings and ages. Since most agencies have clear boundaries to their services, planning for coordination and continuity can easily be overlooked.

Public Law 94-142 has given the public schools a central role in providing service. Therefore, it seems most efficient that school personnel serve as managers to coordinate the many services needed by autistic students. This is not a responsibility to be assumed easily, because the task of schools is already great. However, if such coordination is not initiated by educators, school psychologists, or others within the public schools, it may simply be overlooked. Autistic children present some new and very difficult problems for educators. Only if there is cooperation among agencies and individuals can a comprehensive and effective service plan be carried out.

The key elements which must be present and must be coordinated have been identified by Schopler and Olley (1980). One of these elements, the instructional program, is addressed in detail in other chapters of this book. In addition to the classroom instruction, the following elements must be considered.

Parents and Families

An active role for parents is an essential element in any effective service system. This role is actually a wide variety of activities which should include both individual parents who work closely with teachers in planning their child's educational program and parents' groups such as local or state affiliates of the National Society for Autistic Children which can advise policy makers on the special needs of autistic persons.

Identification and Referral

Although autism is by definition a disorder of early onset (Rutter, 1978), it is not easily identified in young children, and very few states or localities are able to identify autistic children effectively at an early age and refer them to agencies that will work with the family toward comprehensive services for their child. Parents continue to look from place to place in frustration and waste precious time in beginning an educational program.

Educationally Relevant Assessment

Part of the frustration many parents experience comes from the ordeal of many evaluations that yield little information that can be used to teach their child. These elaborate and lengthy evaluations are not always necessary. If we were to individualize evaluation the way we individualize instruction, we would also offer brief evaluations that focus on educationally relevant skills. The assessment of educationally relevant skills should be the focus of any educational evaluation, rather than the attempt to gain an IQ score for its own sake, or the exploration of the hypothesized and usually irrelevant "dynamics" between parents and child, or, worst of all, offering the empty label of "untestable." Further, there must be a link between the evaluation process and the actual implementation of an educational program. This means that educators who will actually have responsibility for the child should be closely involved in the evaluation process.

Such an approach does not mean that all evaluations must be carried out by school psychologists, but it does mean that the agencies responsible for evaluation must involve school personnel in the evaluation and work with them to assure that a program can be implemented. The point has been made for many years (e.g., Wolfensberger, 1965) that an elaborate evaluation that does not lead to an adequate program is a waste of time.

Training

Although there are now some teacher training programs that prepare personnel to teach autistic children, their number is small compared to the need. For a new teacher, particularly, the stress of a class of autistic children or the problems of adding one or more autistic children to a class can be too great. Too many otherwise fine teachers leave their field, because they lack the additional training and support to make their class effective and to maintain their own morale. Much has been written recently about teacher burnout, but there is no proven solution to the problems faced by teachers of severely handicapped children.

One logical strategy to provide competent teachers and to keep them on the job is to offer extensive training and support for teachers. Such a system of inservice training and consultation to teachers can provide a flexible and individualized service to teachers. It is, however, expensive. The addition of these services to the already high cost of education for severely handicapped children may be an obstacle to many school systems. One strategy for keeping cost down is again to emphasize coordination. If all teachers of autistic children in a state or region participate in the same inservice training, and the same consultants work with a number of teachers, expenses will be less, coordination will be greater, and expertise is likely to be higher than if local arrangements are made, e.g., when each class contracts with a local mental health center for training and consultation.

Research and Evaluation

If coordination of services in a region can be achieved, it becomes feasible to gather program evaluation data. Carefully planned research and evaluation can answer many of the current questions about which approach to organization, training, parent involvement, etc., is most effective.

Coordination at the State Level

The coordination that I have stressed repeatedly can be provided at the local level by an education agency or some other group, but at the state level there must be a clear understanding of where responsibility for autistic students rests. The state education agency is the logical coordinator at this level. The facets of a comprehensive educational system described above must be present, and clear lines of responsibility must go with them. State coordination can be greatly enhanced by the efforts of a strong state chapter of the National Society for Autistic Children. If any one piece is missing, autistic children and their families will have lost the appropriate education that they have been promised.

APPROACHES OF DIFFERENT STATES

A review of the approaches to comprehensive planning for autistic children in the states is, by necessity, brief. Although some states (e.g., Illinois) have studied the problem extensively and made recommendations, few states have actually implemented a statewide system.

In Missouri, autistic children attend one of about 20 classes for children with severe behavior disorders which are located in separate schools for the severely handicapped. Although there is extensive teacher training and consulation and a carefully planned program of transition to public schools, the separate nature of this arrangement has brought the threat of litigation for failure to comply with Public Law 94-142.

In South Carolina the Department of Mental Health-Mental Retardation operates regional centers which provide extensive services to many of the most difficult to manage autistic students. There is good coordination with the Department of Education, and the state has contracted with the Judevine Center in St. Louis for intensive teacher training. Like most states, however, South Carolina needs to move toward a base of services in local public schools.

In North Carolina, the oldest statewide, public school-based program for autistic children is operated through a cooperative arrangement between the Department of Public Instruction and Division TEACCH of the Department of Psychiatry at the University of North Carolina at Chapel Hill. At this time there are 35 self-contained, public school classes for autistic children in North Carolina, of which 28 contract with Division TEACCH to receive initial training, inservice training, classroom consultation, administrative consultation, and a yearly reevaluation of each child through one of the five regional TEACCH centers. Funds for these services come directly from the state legislature and from Title VI-B funds allocated to local school systems. The support at the state level is excellent, and the tie with the University provides an expertise in research and evaluation that can address many of the important questions noted above.

North Carolina appears to have the most extensive, although certainly not the only, feasible model. Many of the elements of this system have been studied and implemented by other states, and it appears that services with statewide coordination may soon be available in several other states (e.g., Illinois, Delaware).

REMAINING OBSTACLES

Major problems in the implementation of a comprehensive system remain in all states. Some obstacles are minor and can be remedied by good state level administration as advocated earlier. For example, most states, in addition to administering programs for autistic children under programs for the emotionally disturbed, require teachers of autistic children to be certified as teachers of the emotionally disturbed. This requirement is an anachronism that can be easily changed in each state. But is separate certification for teachers of autistic children necessary? Could they be certified as teachers of the severely handicapped in states which have such certification? The whole issue of certification and competencies needs further consideration.

Other obstacles come from a lack of data and experience to answer practical questions. Do autistic children need a 12-month program? What should the nature of a summer program be? Are schools legally responsible for providing summer programs? Can teacher burnout be prevented or reduced substantially? What is the best relationship between public and private service providers? Can education for autistic children be made widely available in the preschool years? Are separate special education school districts necessary? What are the special needs for the autistic adolescent, and how can they be met? Must classes for autistic children cost a great deal more than other special education classes? When serving children who may also require mental health, medical, recreational, and other services, where does the responsibility of the schools end?

The tireless efforts of the National Society for Autistic Children and other advocates for autistic children have made these issues much more salient than ever. A frequent exchange of information among educators, a strong emphasis upon program evaluation, and continued support at the federal and state levels will answer many of these questions. In the meantime, we will continue to hear of the latest promised remedies for autism. Parents' hopes have been raised and crushed before by such claims, but the one approach which remains sound and for which there will always be a need is quality education. This is the service to autistic children and their families that deserves our greatest support and effort.

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A DEVELOPMENTAL-BEHAVIORAL MODEL FOR THE PRESCRIPTIVE EVALUATION OF AUTISTIC AND SEVERELY SOCIALLY IMPAIRED CHILDREN

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With the requirement for written individualized educational programs (IEP's) for each handicapped child, the need for assessments that provide clear and useful results has become increasingly apparent. Highly individualized evaluation and programming are particularly necessary for the diverse group of children typically diagnosed as autistic. Autistic children often are not only very different from each other, but, as individuals, they frequently have varied skill patterns (DeMyer, 1976; Lockyer and Rutter, 1970). Programming for autistic children is especially difficult because many of their deficits lie in areas of behavior (e.g., language and social interaction) that are learned by normal children with little or no direct teaching. Many behaviors (e.g., direct gazes at faces, communicative gestures) differentiating autistic children from children with other handicaps appear in normal children within the first year of life, if not the first few weeks. For a teacher who is trying to program for an "asocial" 10-year-old, it may be difficult to realize how very basic are the skills he needs to learn. Furthermore, it is much more difficult to teach other kinds of behavior. For example, there is no well controlled research that shows that communication is most easily learned as a series of steps from nonverbal imitation to speaking in paragraphs (Goetz, Schuler, and Sailor, 1979). Programs using shaping procedures to create response chains tend to produce exactly the behavior they teach. When teaching a child to tie his shoe, such techniques can be very successful. On the other hand, the goal behind teaching a child to name five pictures while working at a table for a food reward is usually not just that he will identify those same five pictures in exactly that situation. A broader goal of "useful communcation" would not be met by this task, yet determining appropriate, teachable activities can be very difficult. Finally, many autistic children learn so slowly that it is easy to lose sight of the intended behavior change or to become skeptical about ever seeing progress that will be meaningful to the child. The model presented here attempts to address these issues by structuring evaluation in a way that helps teachers use current knowledge about development and behavior change in programming for the day-to-day and ultimate needs of individual autistic children.

PRESCRIPTIVE EVALUATION

The term prescriptive evaluation has been used to describe the process of assessment of a child's skills and of planning on the basis of these findings. More than a simple description of behavior, a comprehensive evaluation must provide both a delineation of a child's strengths and weaknesses and a sense of how the child's behaviors relate to each other and to the environments in which they occur.

The prescriptive aspect of the evaluation implies that, having identified a child's current behavior, the evaluator will be able to make positive statements about how to treat the child in order to help him progress from his present status to a goal. Typically, these prescriptions refer to content: Johnny must throw a ball of 6-inch diameter through an 18-inch hoop 20 times from 10 feet away with 90% accuracy on 2 consecutive days. While this prescription is specific in certain ways, it also leaves much to be desired in terms of usefulness for the teacher and meaning in the child's life. It fails to indicate three elements of a good prescription that are often overlooked: how the treatment is to be accomplished; when or in what larger context the new behavior should occur (that is, is Johnny playing basketball with another child and shooting spontaneously; is his teacher-coach required to remind him to look before he shoots or to get the ball for him before each shot?), and why is this "treatment" needed (what does this behavior accomplish for the child in his environment?)? When added to a prescription, these elements provide some assurance that the prescribed behavior will be more than "desirable" but also teachable and functional for the child (Donnellan, 1980).

The written IEP was intended to ensure that at least some of these questions would be answered in designing a child's program. Unfortunately, in many cases IEP's, rather than serving either as an impetus for better planning or as insurance against arbitrary, inappropriate programming, simply represent additional paperwork for already busy teachers. Often evaluations are seen as meaningless or, at the very least, as useless or unrelated to the development or programs (Flaharty, 1976). Yet many times dissatisfaction with assessment seems to occur primarily because the evaluation is simply not carried far enough. It is assumed that results from brief, standardized tests will have clear and immediate implications for programming. When an assessment is not readily useful, it is rejected as worthless. On the other hand, programming implemented without the base of a sound assessment often fails to address the child's real needs or to work on appropriate levels of skill. The purpose of this paper is to show how an evaluation can be both feasible and relevant to individualized education. A four-step model of prescriptive evaluation is proposed that moves the child and the evaluation step-by-step from an initial assessment to an IEP. While the process of evaluation may initially seem difficult, in the long-run the information acquired should make the design of effective programs, relevant to the individual needs of the child, far easier.

The model presented here stems from both developmental and behavioral biases (Rutter and Sussenwein, 1971). From a developmental perspective comes the assumption that consideration must be taken of how a child's behavior and ability to learn are affected by his level of skill and understanding in different areas (Schopler and Reichler, 1971). It is not our contention that programming must always proceed along the stages of normal development. For example, a child need not be taught to babble before he is taught to say some simple words. However, it is proposed that recognition of developmental levels, often differing within a child across skill areas, may be helpful in understanding a child's behavior (e.g., why a severely retarded and autistic 12 year-old wants to rough-house and hug people) and in providing a place to start looking for appropriate behaviors to teach. The behavioral aspect of this model lies in requiring goals that are clearly defined in terms of observable behaviors and in assumptions about the effectiveness of behavioral techniques in effecting change (Lovaas and Koegal, 1973).

The model proceeds from a number of assumptions beyond its general developmental-behavioral perspective. First, it is assumed that teachers are responsible for most programming decisions. Although many teachers receive input and support from other resources, not the least of which are the child's parents, the teacher almost always has the ultimate responsibility for the child's progress in the classroom. Thus, while it is not proposed that a teacher must singlehandedly perform the entire evaluation, it is assumed that the teacher will be involved to some extent at each stage of the process (see Olley, 1980). The model presented here would be equally appropriate for use in planning programs to be carried out at home or in other contexts outside school. However, for the purposes of this paper, we have elected to focus on evaluation and programming within a school setting.

The second assumption is that the length of time spent on an initial evaluation is less important than the amount of careful thought that guides it. There is sometimes a temptation, particularly in the case of a child who is very difficult to understand, to give more and more different tests and/or to collect more and more data, rather than to consider the meaning of the scores or data at hand in terms of the child's current status and ultimate functioning. The model for prescriptive evaluation proposed in this paper should not involve more than a day's work per child with the time distributed over several weeks. When the teacher knows what to look for, two 20-minute observations at home and at school can be more beneficial than weeks of 10-second time-sampling or five standardized language tests given without clear goals for assessment or observation. A relatively brief initial assessment that yields clearly stated hypotheses, and plans for testing them allows the teacher to continue the evaluation process as part of the regular class time, building on the original evaluation. In this case, there is no substitute for the teacher's experience with children exhibiting severe deficits in communication and social skills and with normal children. Diagnostic instruments and models for evaluation will be only as good as the person using them.

Table 1 lists four steps in a comprehensive evaluation resulting in an IEP. None of these stages is unique to this model. The purpose of delineating the four steps is much like that of writing an IEP. For each step in the evaluation, particular goals are identified in terms of information about the child that the teacher needs to acquire. For each of these goals, a number of different ways of finding this information are proposed.

Table 1

Four-Step Model for Prescriptive Evaluation

1. Developmental assessment	Identification of what child can do in the best of circumstances and drawing inferences about what the child cannot do reliably. Development of hypothesis about strengths and weaknesses and patterns of behavior.
2. Structured observation in child's environment	Re-assessment of results from development assessment in terms of what child does and does not do in typical environments. Development of hypotheses about factors within child and in different environments that influence child's behavior. Assessment of environmental demands.
3. Needs assessment	Delineation of child's current and long-term needs at school and at home. Statement of general goals for the child for the year. Selection of specific objectives to meet these goals.
4. Determining activities and strategies to use in teaching	Testing out different strategies and activities to teach each objective.

Step 1: Developmental Assessment

The purpose of a standardized developmental evaluation is to begin to identify what a child can do in a structured one-to-one setting and to make some tentative inferences about what a child does not do reliably. In between these two extremes, this first assessment must also identify a child's emerging skills (Schopler and Reichler, 1979). Along with the test results, parents' observations of the same behaviors are of critical importance in making even these preliminary judgments.

Knowledge of a child's levels of functioning in terms of normal development (for example, an IQ or mental age) is not very useful in itself. However, the delineation of a child's pattern of skills, as related to normally developing children (Gould, 1976; Schopler and Reichler, 1971) and other children with similar autistic behaviors or social-behavioral-language problems (Wing and Gould, 1978), can be a very useful starting point for an evaluation procedure. The child's various levels of development in major content areas such as language, motor skills, and cognition provide important prognostic information (Lotter, 1978) and give some indication of expected rate of progress and a place from which to start programming. This can be particularly important in areas such as language and social skills, since most teachers have little training in sequences of normal development. In this situation, a teacher may be helped in selecting appropriate behaviors by her concept of how 3-year-olds play or the kind of language a 1-year-old understands (Rutter and Suesenwein, 1971; Wing 1976a). With a child whose pattern of skills is uneven and confusing, a developmental assessment may help to make expectations more realistic. For example, a 14-year-old non-verbal boy who shows no skills above a 3-year-old level might be a better candidate for signing or a word board than for a functional writing program, even though his fine motor abilities, assessed by testing at a 3-year-old level, are some of his most advanced skills. A developmental evaluation may also allow a teacher to discover previously unnoticed abilities that a child might never have been given the opportunity to use in her presence. For example, a new 3-year-old student who has many autistic behaviors, and who tends to wander, may surprise everyone by his abilities to imitate and use simple tools in a highly structured situation.

It is possible that the same conclusions might be reached without a standardized assessment. For example, in the first case above, a teacher might have concluded that the adolescent boy would have difficulty learning to write by simply watching his accuracy in drawing circles or squares. However, standardized assessment devices provide valid norms and save all but the most creative and energetic teachers from starting over with each child. After a year or two of working with handicapped children, the special education teacher may lose perspective on what is normal and what is not. For example, it is easy to forget how uncooperative, "over-active" or inconsistent many normal youngsters are, and consequently to draw inappropriate conclusions about resistance, inconsistency, or hyperactivity in autistic children. On the other hand, a teacher who seldom works with children who speak in more than one-word utterances may have unrealistic expectations for a six-year-old child who speaks in multi-word sentences that are, in actuality, still less sophisticated than those of most three-year-olds. Current research in journal articles and monographs can be very useful in generating ideas for activities. However, populations in specific studies are rarely selected with the idea of establishing general norms to which individual children should be compared. Thus, while one might use an article on normal social development as a source of possible behaviors to teach, it would be incorrect to place a particular autistic child at a particular age or skill level on the basis of how he compares to the subjects in a specific study.

Use of assessment results. More important than any single level revealed in a developmental assessment is the child's pattern of behavior. Most scales allow the evaluator to make some inferences about a child's strengths and weaknesses in different content areas. Since this is only the first step in the evaluation, these inferences can be considered as working hypotheses. The hypotheses need to be clearly stated, but they can be revised, refined, or abondoned over the course of the evaluation. Thus, the teacher need not feel that he is making irrevocable, life-determining decisions on the basis of a few test items.

If any test results become part of a child's permanent file, it is important that the evaluator clearly state in writing the ways in which the scores are useful and reliable and the ways in which they are not. Many parents and professionals have legitimate reservations about the use of test scores, particularly IQ's. Since numbers, such as IQ's, often take on a life of their own once they are stated in a written report, one strategy may be to restrict the final report to a discussion of the child's performance in individual skill areas and omit any overall scores. After discission, a brief written report of any results that were not to become part of a school record could be given to the child's parents to be used at their discretion.

A one-to-one structured situation not only allows the evaluator to record a child's accuracy on test items but also to begin to note other aspects of the child's behavior that will affect eventual programming decisions (Schopler and Reichler, 1979). The teacher should be aware of the speed with which the child works, his flexibility, persistence, attention span, and initiative across different content areas. How the child reacts to success, failure, or potential reinforcers can also be noted. Gaps in the child's skills and the use of one behavior to supplement or avoid another may be much more apparent when working from a developmentally based test than in less structured interactions. Knowing what a child can do in a structured one-to-one situation, when combined with the structured observations in step 2 of this model, also allows the teacher to differentiate between skills that a child does not have at all and skills that he does not use in the appropriate situation. This distinction is essential to programming. Working to generalize an "old" behavior is a reasonable activity, but often it should be done in different ways than teaching a new behavior (Carr, 1980). For example, if a child is learning to discriminate among colors for the very first time, one might want to use a relatively restricted set of materials. However, if an assessment revealed that a child used color on some tasks but not others, one might want to deliberately vary materials and colors across many situations in order to achieve more generalization.

Types of standardized assessments. Particular assessment devices are less important than the examiner's ability to work from them to reach the goals for this first step of the evaluation. In many situations, a person (or persons) other than the teacher may be given responsibility for this initial evaluation. Whether this effort is successful or not depends on the usefulness of the testing results to the teacher. The teacher and parents should attend the evaluation if at all possible. They should work with the examiner in formulating the working hypotheses described above or they should be given sufficient information so that they can begin to ask these questions themselves. An assessment that results only in test scores does not meet the goals of this evaluation. In fact, an inappropriate assessment, particularly when performed by a person inexperienced with autistic children, may cause more harm than good.

There are a number of different assessment devices available to teachers and clinicians that could be used for this first step of prescriptive evaluation. In most cases, each individual scale can be administered in 90 minutes or less; many tests take much less time. Different assessment techniques will be most appropriate for different children. Comprehensive reviews of these tests and discussions of appropriate populations are available elsewhere (Gould, 1979; Freeman and Ritvo, 1976). From the teacher's point of view, two considerations seem foremost. The first is that the teacher find tools with which he or she feels comfortable. This statement implies that the teacher has adequate and regular experience either administering the scales herself or interpreting their results (Wing, 1976b). The second consideration is that the teacher recognize the limitations of the instrument used. For example, though the performance scale of the Wechsler Intelligence Scale for Children (WISC-R) supposedly measures nonverbal intelligence, a child's understanding of the test items is greatly dependent on his social and communication skills. Such limitations must be taken into account. Similarly, information from the parents about how the child normally behaves should be compared to his behavior during the assessment.

One can rather arbitrarily divide the scales available into three groups: developmental tests designed for autistic-like children, standardized language measures and intelligence tests, and diagnostic scales. Probably easiest for teachers to administer are developmental scales especially designed for use with autistic children or young children with severe communication or behavior problems. Two such scales are the Psychoeducational Profile or PEP (Schopler and Reichler, 1979) and the Evaluation and Prescription for Exceptional Children or EPEC (Flaharty, 1976). Although the two scales come from somewhat different perspectives, both portray developmental sequences in many skill areas that normal children display through early school age. Both scales allow more flexibility in administration than most standardized tests.

A second kind of option, often used in addition to tests such as the PEP or EPEC, is available in standardized intelligence and language tests such as the WISC-R, the Leiter International Performance Scale, and the Peabody Picture Vocabulary Test. Good discussions on the use of these tests with special populations can be found in Freeman (1976), Gould (1976), and Stremel-Campbell (1977). As stated earlier, the goal in using such a test would not be to acquire a single intelligence or language quotient but to indicate the pattern of the child's skills and behavior. Typically, verbal intelligence tests are appropriate only for the highest functioning autistic children. These tests may be extemely difficult to administer using standardized instructions. Though the goals for this first evaluative step may be met even without adherence to standard instructions, it is then important not to treat the test results as if they were scores obtained from the test given in a standard fashion.

The third type of scale includes those designed to differentiate autistic children from those with other disabilities. Examples would be the E-2 Diagnostic Scale (Rimland, 1971), the Behavior Rating Instrument for Autistic and Atypical Children (Ruttenberg, Dratman, Frakner, and Wenar, 1966) and the Behavior Observation Scale (Freeman, Guthrie, Ritvo, Schroth, Glass, and Frankel, 1979). These measures are not developmental. On the whole, they do not provide the kind of information required for this evaluation. However, these scales call attention to the importance of considering any unusual behaviors (autistic or otherwise) that interferes with a child's learning, using of skills, or participation in society. This information is far more important for the teacher and parent than the name of the child's diagnostic syndrome. When an initial assessment is conducted from a developmental point of view, it is often tempting to describe a child's behavior purely in terms of delays. Most children who are appropriately or inappropriately referred to programs for autistic children or children with severe social or behavioral disorders are referred for some reason. Often the reason may have little to do with autism. Even then it is important for the evaluator to address particular behaviors that caused the child's referral for testing. Any behaviors that have implications about restrictions in a child's environment must be described and considered in the following steps of the evaluation.

In summary, as they appear in Table 2, the goals for the first step of the evaluation involve identifying the child's pattern of skill and behavior in the context of normative and highly structured tasks. This information is then taken out into the "real world" as it is compared to observations made of the child in his normal enviroment.

Table 2

Questions to Guide Developmental-Behavioral Evaluation

Step 1: Developmental Assessment

1. What is the child's pattern of skills?
    - a. In what areas does he function most capably?
    - b. What kinds of tasks are most difficult for him?
    - c. What new skills are emerging?
    - d. How do the child's behaviors correspond to normal levels of development?
2. What do the instrumen[illegible]d in this part of the assessment measure well and measure poorly? How did the use of particul[illegible]ment tools affect the results?
3. What characteristics of the child not directly assessed were likely to have influenced his behavior (e.g. motivation, attention span, other distracting behaviors)?
4. Within the range of a structured one-to-one situation, how were the child's behaviors related to his environment?

Step 2: Structured Observation

Although developmental assessments can yield a great deal of information, many gaps remain before appropriate programming decisions can be determined. Few standardized tests include measures of the autistic child's self-help skills or social interaction, particularly with other children. The one-to-one setting required by standard tools provides a good opportunity for discovering what a child can do; however, it is still necessary to find out what a child needs to do and does in his typical environment. Structured observations could be performed in a "diagnostic" period preceding the first week of school or during the first few weeks. They should include a home visit and observations by the parents. Again, the time need not be long as much as goal-directed.

Validity of standardized scales. Observations should be structured around the goals. The first goal is to check, within reasonable limits, the validity of the major finding of the developmental assessment in contexts other than a one-to-one setting. For example, if a 3-year-old child's peak skills on the PEP or Merrill-Palmer involved her manipulation of puzzles, one might want to observe the child's behavior with puzzles and other materials requiring fine motor skills in the classroom and at home. Without the teacher sitting across from her giving rewards, does she complete puzzles on her own? With what kind of materials (if any) does she choose to work? Does she do similar activities at home? Does she use the same perceptual and fine motor skills in activities such as dressing or setting the table? Observations should also check behaviors that seemed difficult for a child during the developmental testing. The examiner might not have been able to get a child to imitate any test items; however, the same child might be observed imitating her older sister's use of utensils during dinner time at home. In this "validity check," particular note should be taken of behaviors that prevent the child from using the skills exhibited in the standardized setting (e.g., extreme reactions to broken routines, visual distractibility, verbal perseveration). Behaviors that are likely to result in restrictions in the child's environment also merit very directed attention (e.g., aggression, self-injury).

Observing other behaviors. A second goal is to observe behaviors important to the child but not yet evaluated or assessed in sufficient detail. Behaviors that are rather difficult to normalize, such as communication and social interaction, often fall into this category. If the teacher feels overwhelmed taking on such an ambiguous task, sequences of skills such as those listed in some language or social development scales or articles on social-behavioral or language development can be helpful (Strain, 1980). Again, the teacher's goal goes beyond scoring whether the child has a certain behavior or not, to noting how and in what circumstances he uses or fails to use the behavior in his typical environment.

Structuring observations around regular events when emerging skills are most likely to occur--for example, a meal, dressing and a couple of small group activities--can make the observations more worthwhile and less time-consuming. Time-sampling or complete records of infrequent behaviors that occur throughout the day can be used, as well as detailed observations of particular events. For a child who occasionally signs spontaneously, a teacher might record each sign the child uses during the day and the situation in which it occurs (e.g., lunchtime, child wants more milk; outdoors, needs shoe tied). For a child with more language, a teacher might sample the first five minutes of every hour, record several 15-minute segments that each cross several different activities or observe language occurring in particular situations such as snack or free play.

Demands of the natural environment. A third goal of structured observation is to identify the child's needs as he currently functions in his environment. Evaluation of environmental demands placed on the child can be made systematically by recording in detail situations in which a child needs to respond but cannot or does not. For example, are there times during the day when the child cannot simply rely on gestures but when he clearly needs to communicate? Does the child exhibit a behavior that is harmless but particularly annoying to his family?

Obviously, selection of the questions to be answered by direct observations and determining the particular behaviors and situations to be observed requires numerous decisions by the teacher. Input from the parent is of great importance at this point. Structured observations are intended to help the teacher work from the knowledge and questions that arose in the developmental assessment toward a conception of how the child acts within his environment and how he needs to act. Goals of this step of the assessment are summarized in Table 3.

Table 3

Questions to Guide Developmental-Behavioral Evaluation

Step 2: Structured Observations

1. **How many and which of the behaviors produced in the standardized testing do you see in the classroom and/or at home?**
2. **Are there behaviors the child does in a more familiar or less structured environment that he did not use in the developmental assessment? What factors seem to account for these differences? (to be experimented with in step 4)**
3. **What demands do different environments impose on the child? How many behavioral options does the child have in response to these demands? What are the child's needs as he currently functions in his environment?**

Step 3: Needs Assessment: Generating Goals and Specific Objectives

Long-range and short-term objectives. An assessment of the individual child's needs is essential to developing meaningful educational goals. The purpose of a needs assessment is to determine both the needs of the child and his family and to consider what educational services are required to meet these needs. Yet, in reality, valid assessments of a child's day-to-day or life-long needs are rarely performed. Even more rarely are they used in programming decisions. The ideas proposed in this third step of the evaluation are not new but are all too often forgotten. First, it is suggested that both the immediate needs of the child in his current environment, and his long-term needs require careful assessment and consideration. Second, it is proposed that yearly educational goals should reflect both kinds of time-related needs. Thus, every goal should have immediate consequences for the child as well as long-term implications. Consequently, a long-term goal of "increased communication" should also state when and what the child needs to communicate in his current situation. A long-term goal of "improved fine motor skills" should state how the child can use these skills in his immediate environment. In addition, specific objectives can be directly tied to goals, not just in terms of content areas (e.g., a goal of increased communication results in an objective of 5 expressive signs) but also in terms of their function in the child's life (e.g., the signs are selected and taught so that the child may indicate basic self-care needs). To reiterate, it is proposed that year-long goals be stated in terms of both content area and functionality, that the goals be sufficiently detailed so that they are measurable and that they be related to specific objectives. For example, a goal might be: "Susan will communicate basic needs to familiar people when given nonverbal cues." Another goal might be: "Paul will learn fine motor movements needed for dressing, undressing and other self-care and will use these movements in these activities when given verbal prompts." More specific examples are given below.

Decisions involving long-range needs are best considered in terms of a child's most probable adult living situation (i.e., criteria of ultimate functioning). The degree of independence in which the child can function has very serious implications for the kinds of behavior he needs to learn and the number and kind of contexts in which he needs to operate. Obviously, the age of the child will affect the importance of these long-range concerns. The child's intellectual ability, in terms of his best skills, should also affect these priorities. Thus, one might want to assume tentatively that a high-functioning, mildly autistic three-year-old will eventually be in a relatively normal adult living situation. Programming might then emphasize his immediate needs within his family and tutoring to support his experience in a normal nursery school. On the other hand, for a severely retarded thirteen-year-old whose least restrictive placement might be a highly structured group home, programming should address very specific future environmental demands.

Strengths and weaknesses. The child's relative strengths and weaknesses both in terms of behavior problems and content areas also affect the delineation of his needs. Decisions may be made to aim programs both at strengthening areas to some minimal levels (for example, to teach a child with extremely poor fine motor skills to use a spoon) or to build on already strong skills (for example, to teach a child with relatively good fine motor skills to put telephones together as a vocational activity). Strong skills could be used to meet more complex and indirect functional needs whereas programming for weaker areas would be more directly related to functional skills.

Deficits in particular content areas have implications about a child's prospects for independent living. Autistic children who have severe deficits in language or who exhibit severe behavior problems are much more likely to live eventually in very restricted environments (Lotter, 1978). This knowledge should affect programming both in terms of setting priorities and in terms of anticipated placements (e.g., avoiding institutionalization by teaching of minimal skills necessary for a group home).

Current environmental demands. Current environmental demands on the child, as identified in step 2, must also be considered. Priorities of the family, as well as teacher concerns, need to be taken into account. Goals should address these needs not only in terms of which skills a child must acquire but also in terms of the contexts in which he must use those behaviors. For example, if a family priority is that the child interact more frequently and positively with a sibling, the goal should indicate not only the changes in social interaction but also state when and with whom these changes are expected to occur. Thus, a goal might be: John will interact with one other child in a structured activity with adult supervision. Objectives would indicate the type of structured activity, how the adult will supervise and the operational definition of "interact." Out of the objectives, a series of activities can be planned.

Yet, this example illustrates the difficulity in generating specific programs from general prescriptions. Although this model for assessment has laid out general directions for programming, it still does not ensure that specific tasks will meet the goals. Consequently, the teacher is left with additional decisions. At this particular point in prescriptive evaluation, it is often tempting for the teacher to ignore the first three steps of the assessment and turn to relatively unrelated but familiar objectives and sometimes fairly meaningless activities (e.g., John will identify the weather with 90% accuracy over 10 consecutive days during morning group). Because of the need to document change, many teachers feel pressured to work on isolated behaviors with little relationship to the child's needs or environment. Generalization of these easily identifiable and easily modifiable behaviors is assumed, even though the evidence suggests that it rarely occurs (Lovaas, Koegel, Simmons, and Long, 1973). Moreover, thought is seldom given to expanding the usefulness of behaviors a child already possesses.

A framework for using the needs assessment. Every behavior that a child learns or needs to learn can be considered on a number of different dimensions. Three dimensions of behavior relevant to programming for the autistic child are its complexity, the context in which it occurs, and the number of other different behaviors at the same developmental level that serve the same function. Using goals arising from the child's immediate and ultimate needs, specific objectives can be used to define behaviors on the basis of these three dimensions: complexity, context and quantity.

One way to conceptualize the relationship among these three dimensions is to think of placing any behavioral objective on a cube defined along the dimensions of complexity, context and quantity (see Table 4 on the following page). Complexity is defined as the most appropriate level of behavior that can meet a particular goalfor an individual child. A continuum of complexity appropriate to the individual child is identifiable from the developmental assessment (step 1 of this model). For example, a continuum of complexity for syntax would range from single words to complicated conversations. A particular child might be seen as functioning primarily at the one-term level in comprehension with emerging but limited abilities to understand two elements of a sentence. In social interaction, complexity might range from very basic infant-level behaviors like maintaining proximity or attending to the actions of another person, to slightly more complicated social behaviors like imitation or sharing, to higher level interactive behaviors like competitive group sports or participation in democratic decisions. Developmental sequences, as well as task analysis, can be useful in identifying levels of complexity. However, different behaviors should be considered in light of the individual child's strengths and weaknesses.

The second continuum on the cube is context. Context, here, means the situations in which a behavior must occur in order to meet the designated goal. Contextual characteristics include where and when the behavior is to occur. These designations should be both general, such as at home or at school, and specific, such as at a table during a structured activity or while riding in a car. They should also indicate who else is present, what the other people are doing (is the teacher giving verbal prompts?) and the relationship between the child's behavior and other events (is the child expected to do this action spontaneously? in response to a direct instruction?).

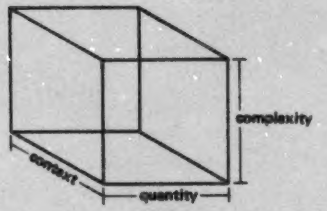
For any given goal, the teacher should be able to identify, using step 2 of this model (the structured observation), the contexts in which an appropriate behavior already occurs and the contexts in which it needs to occur. Thus, we might note that Johnny can understand single aspects of commands at school when the teacher, standing in front of him, first acquires eye contact and then gestures toward a desired location. A decision may be made that Johnny needs to respond to the same commands given by other adults at school and at home with less intrusive behavior on the part of the adult. For the social interaction goal (see Table 4), it is already known that Johnny sits in morning group for up to 10 minutes and takes his turn imitating other children if the teacher is sitting at the same table and frequently reinforces him with food. A decision may be made that he needs to have similar social "interactions" at home with his sister and in less "teaching"-oriented activities with less adult supervision.

The third continuum is the quantity of behaviors programmed at one level in one context to meet a stated goal. Given that a child understands single terms in directions, one could conceivably program 5 or 20 or even 100 singleterm instructions for him to learn in each context identified as important in the needs assessment. For example, in the context of getting dressed, one could teach the child to understand "up," "pull," "over," "arm," "look," "zipper" and "on" for an infinite quantity of words. For a social interaction objective, one could teach any number of simple social behaviors such as taking turns or imitating the actions of others (see Table 4). The question of how many different behaviors should be programmed at a particular level to occur in a particular context must be decided by the individual teacher for the individual child for each goal. There is no magic answer. Most important, though, is the extent to which each additional behavior helps the child meet the demands of his current environment or will enhance his ultimate functioning.

The usefulness of this model lies in its potential in helping the teacher work from goals to generate specific objectives using the three dimensions portrayed in the cube. As shown in Table 4, specific objectives (listed at bottom of the table) can be created that relate directly back to the dimensions of complexity, context, and quantity of behavior. The specific objectives are more detailed statements of

Table 4

Specifying Dimensions of Behavior



Sample Goal: John will interact with one other child in a structured activity with adult supervision.

Dimension		
Complexity	The developmental assessment indicates that John is performing at a level of social interaction similar to that of many toddlers.	level of social interaction = take turns; imitate actions.
Context	The needs assessment revealed that John's family and teacher would like him to have social interactions with different children at home and at school for a short period of time and with a minimal amount of supervision from an adult.	structured activity = matching tasks; "Simon Says"; child = two other students and sister; supervision = teachers providing verbal or gestural prompts; mother and teachers providing food and/or social reinforcement.
Quantity	Two types of social interaction John's parents and teachers identified to help John better participate with other children at home and at school. Activities will be designed to teach these behaviors in a number of different contexts.	number of different behaviors at the same level = 2 (taking turns and imitation).

Specific Objectives

1. John will take turns with another child during a matching task for up to 10 minutes when an adult provides prompts and reinforcement.
2. John will imitate motor actions of another child when playing "Simon Says," when an adult provides prompts and reinforcement.

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behaviors that meet the goals and are teachable and learnable for a particular child. In step 4, these objectives will be used to generate specific activities.

Another benefit of this model is that it allows the teacher to think about how to maximize the usefulness of behaviors the child already has and minimize the amount of change entailed in a single activity. Thus, one could coordinate a program so that the child moves along all three dimensions of the cube, but that different activities would each emphasize progress along only one or two dimensions at a time. For example, a language activity might be aimed at increasing a child's level of complexity by teaching him to follow some two-term instructions. However, this change in complexity could be restricted in quantity to two new instructions made up of words he already knows and limited in context to one highly familiar, pleasant situation (e.g., snacktime). Other activities would work from already established behaviors (and so not move up in complexity level) but be aimed at increasing quantity and/or contexts. In fact, most educational programs for autistic children today seem to emphasize either quantity or complexity. The purpose of the cube and of this model is to show that the context in which a child is able to use a behavior is of equal if not greater importance than the quantity of different behaviors he is able to use in one situation or the complexity of those behaviors. With careful planning, different activities can be designed that result in progress on all three dimensions. In summary, the third step of the evaluation moves from the identification of the immediate and ultimate needs of the child to providing a framework to help teachers deal with issues such as the appropriate level of complexity at which to teach a new behavior, the importance of considering the contexts in which it should appear and the number of new behaviors to be taught. Questions depicting the goals of step 3 of the model are listed in Table 5.

Table 5

Questions to Guide the Developmental-Behavioral Evaluation

Step 3: Needs Assessment

1. What are the long-term needs of the child in terms of ultimate functioning?
2. How can these needs be coordinated with the immediate demands of current environments identified in step 2 of this model?
3. Given goals written to address both long-term and immediate needs, what are the most useful ways of changing the child's behavior in terms of
    a. complexity?
    b. the context in which it occurs?
    c. quantity of new behaviors?

Step 4: Determining the Activities and Strategies to Use in Teaching

In this final step of the evaluation process, the teacher directly tests out activities and strategies to use in teaching the objectives identified in Step 3. The activities and strategies used in teaching are all too often based on the concerns, biases, and convenience of the teacher. If a child is to realize the goals set for him, activities and teaching strategies must reflect the child's individual needs. To ensure this, the teacher's exploration of different activities and strategies should be guided by the findings of the previous evaluation steps. The activities and strategies must be related to the child's developmental level, his current skills, and his immediate and long-term needs.

Findings of the developmental assessment help the teacher select activities at the child's developmental level. As shown in Table 4, one objective set for John is to "take turns in a structured activity". If the developmental assessment reveals that John is functioning near a two-year-old level, using the game of chess to teach John to "take turns" would probably be inappropriate because it is too difficult for him. Simple board games and tasks that involve matching items such as picture lottoes and dominoes would be more appropriate activities to explore with John.

Activities from the child's daily routine or activities that he seems to enjoy doing also need to be considered for use in teaching. The most useful learning does not always occur sitting across from the teacher at a table. The child is more likely to use a skill when it is part of his daily routine. Information gathered during the structured observation and needs assessment steps of the model can be helpful in identifying possible activities. For example, a child may be observed to enjoy riding in a wagon. This activity and similar activities, such as swinging, could be structured so that the child takes turns with another.

Activities used to teach more than one objective have great educational value. Activities that reinforce more than one target behavior provide the child with more opportunities to "practice" the behaviors. In the case of John, the game of "Simon Says" could be set up to teach two objectives: "taking turns" and "imitating actions." Likewise, more than one activity can be used to teach a single objective. A number of different activities at the same skill level and/or in different areas of learning should be explored. For example, a number of different board games that involve the same skill of matching might be used in teaching John to take turns. A household activity that requires similar matching skills, such as sorting silverware to be put away might also be used.

Music, an activity in which the entire class or group participates, can be individualized for each child. The objective for one child, thus, might be singing and playing a simple instrument to accompany the music. For another child, the objective might be passing an instrument to the child next to him.

The activities that are used in the child's specific educational program are only as effective as the strategies used in teaching. The teacher should be concerned with the kinds of instructions and reinforcers to which the child best responds, and how the environment must be arranged to facilitate learning. How much structure does the child need? Does he learn better one-to-one or in a group? How long can the child attend to an activity? Some answers to the questions may have been obtained during the developmental assessment and structured observation. Further answers can be derived from a behavioral analysis or sequence analysis (Sulzer-Azaroff and Mayer, 1977).

Assessing effects of antecedents and consequences. A behavioral analysis systematically investigates how the environment affects learning by attempts to identify the relationship between the child's behavior and the events that immediately precede and follow it. Different antecedents and consequences can change behavior or affect learning. How information is presented to the child and how the environment, in this case the teacher, responds to the child's behavior influences learning. By systematically manipulating antecedents and consequences, the teacher can determine some important characteristics of how the child learns.

Manipulating the antecedents involves varying the instructions presented to the child. The teacher should note how the child responds to different types of input. A child may perform differently when instructions are visual (e.g., pictures, written words) than when the same instructions are spoken. Different instructional cues should also be investigated. For example, using the earlier example of 'taking turns,' the teacher might try using verbal prompts by saying 'your turn,' or using gestures such as pointing to indicate his turn to him. The child should be provided with prompts ranging from those that are minimally intrusive (e.g., facial expression) to those involving total physical assistance, to determine how much assistance he needs in different activities.

Manipulating consequences includes testing the effectiveness of a variety of reinforcers, and varying the reinforcement schedule. Consequences are reinforcing when they maintain or increase the probability of a behavior. The teacher should make no assumptions about what is reinforcing for a particular child. The effects of reinforcers, including edible, tangible, and activity reinforcers, tokens, social reinforcement, and any combination of the different types, need to be determined for each child. If a reinforcer is effective, it should maintain behavior at an acceptable level.

The effects of reinforcement frequency on behavior should also be noted. Does the child require continuous or intermittent reinforcement to maintain a desired behavior? Once the teacher assesses the required reinforcement frequency, some practical considerations are warranted. To maximize generalization of new behaviors, a teacher should determine a reinforcement schedule that both approximates that which is available in the natural environment and maintains the behavior. Whether the child responds to natural or more artificial antecedents and consequences also has implications for determining teaching strategies. Antecedents and consequences that most closely parallel those available in the natural environment offer greatest probability for maintaining a child's behavior.

Determining strategies used in teaching also involves describing how activities will be structured to satisfy the conditions specified in each objective. Structuring each activity is facilitated through direct experimentation with the child. As shown in Table 6, in John's program, one would work from the two objectives to specify each activity that will be used, with whom John will take turns, whom will be imitated, and the specific prompts and reinforcement adults will provide in each activity. The teacher also can explore different ways that activities can be structured to emphasize important dimensions of behavior (discussed in Step 3). Table 6 (See following page) delineates the design of different activities that meet the objective and emphasize relevant dimensions of behavior. For John's first objective (i.e., taking turns), three different activities are used in three different contexts. John takes turns with three different children in two settings (home and school) for different lengths of time and with different levels of help from teachers and parent. In the second objective (i.e., imitation), one activity, the game of "Simon Says" is used to teach John to imitate different children in different settings.

Each activity fulfills the conditions specified in an objective. Each is designed to be accomplished by the child with the greatest degree of independence. The degree of independence considered attainable for each child is based on analysis of pertinent findings of the evaluation, especially the structured observation and needs assessment. These findings are verified by direct testing of each activity with the child. Table 6 indicates that John will need a gesture or verbal prompt, and food and/or social reinforcement for most of the activities. Since the activities correspond to conditions defined in the objective, each activity can be used to measure the child's progress. For example, in order to evaluate whether John has met the goal of "improved interaction with another child" in a structured activity, the teacher would record the number of different activities and conditions (see Table 6) in which John achieved a predetermined criteria (e.g., two times in 5 minutes; 10 minutes play without leaving or disruption) on the

Table 6

Specifying Relevant Dimensions of Activities

Objective:

John will take turns with another child during a matching task for up to 10 minutes when an adult provides prompts and reinforcement.

Activities/Strategies:

Conditions:

Kind of task:	a. Picture lotto	dominoes	matching silverware
Time at task:	b. 5 minutes	10 minutes	10 minutes
With whom:	c. with Jason at school	with Susan at school	sister at home
Behavior of adult:	d. teacher sits at table and provides gestural prompts and food reinforcement	teacher stands nearby providing verbal prompts and social reinforcement	mother stands nearby providing social reinforcement

Objective:

John will imitate motor actions of another child when playing "Simon Says" when adult provides prompts and reinforcement.

Activities/Strategies:

Conditions:

Structure of game:	2 students (John and another student) copy teacher's actions with objects	Second student models action, teacher copies, then prompts John to copy	Second student models action; John copies
Materials:	5 familiar objects		
With whom:	with Billy at school	with Sally at school	with Brian
Where:	sitting on mat in classroom	standing in center of room	in gym
Behavior of adult:	teacher provides gesture prompts to direct attention, and social reinforcement	teacher provides gestural prompts and social reinforcement	gym teacher provides gestural prompts (no model) and social reinforcement

two objectives of taking turns and imitation. Thus, after three months, John's teacher might report that John has been able to play picture lotto and dominoes without disruption for 10 minutes with Jason and Susan at school and his sister at home, but that he continues to need verbal prompts as well as social reinforcement (see Table 6).

The IEP is a natural outgrowth of the prescriptive evaluation process. Information gathered at each step of the evaluation is incorporated into the child's educational program. For example, Table 7 (see following page) shows the social interaction goals selected for John. The goals, objectives, activities, and strategies are derived directly from John's skills and needs identified through the evaluation. The prescriptive evaluation model proposed here provides a means of generating meaningful, attainable goals that reflect the individual needs of the child as well as a clear plan to accomplish the goals.

Questions summarizing the issues addressed in planning activities are listed in Table 8 (follows Table 7).

CONCLUSION

In conclusion, the model for prescriptive evaluation based on developmental and behavioral theory aims at using information about a child's needs and abilities to design a truly individualized program. The emphasis is on not only teaching various content areas but on more serious consideration of helping the child use his skills in various contexts so that he can better meet his own needs and those of his family. This model should not take much more time than typical assessment procedures used in many programs. What it does require is careful thought and consideration of each individual child. The hope is that, used correctly, it will lead to programs that benefit the lives of individual children with autism or related disabilities.

Table 7

Sample IEP Goal, Objectives, Activities and Strategies

Goal	Objectives	Activities (With Criteria for Evaluation)
I. John will interact with another child in a structured activity with adult supervision.	A. Takes turns with another child during a matching task/game for up to 10 minutes when an adult provides prompts and reinforcement.	1. Picture lotto for 10 minutes with another sutdent; teacher sits at table and provides gestural prompts and food reinforcement. 2. Dominoes for 5 minutes with another student; teacher stands nearby providing verbal prompts and social reinforcement. 3. Matches silverware at home for 10 minutes with sister; mother stands nearby and provides social reinforcement.
	B. Imitates motor actions of another child when playing "Simon Says" when adult provides prompts and social reinforcement.	1. Two students copy teacher's actions with 5 familiar objects when sitting on mat; teacher provides gesture prompts to direct attention, and social reinforcement. 2. Second student models a motor action (without materials) while standing in center of classroom; teacher copies then prompts John to copy; teacher provides gestural prompts and social reinforcement. 3. Second student models action, John copies during gym time when gym teacher provides gestural prompts (no model) and social reinforcement.

Table 8

Questions to Guide the Developmental-Behavioral Evaluation

Step 4: Determining the Activities and Strategies to Use in Teaching

1. What activities or information from the developmental assessment and structured observation of the child can be used to develop activities and strategies for teaching? Did the child display some aspects of or prerequisite(s) to the target behavior or skill?
2. Are there events or activities that the child already engages in that could be used in teaching a particular skill?
3. Is there an activity that could be set up to teach more than one objective?
4. Are there a number of different activites at the same skill level and/or in different learning areas that could be used to teach a particular objective?
5. What type of information does the child respond to and use best (e.g. visual, auditory, tactile, etc.)?
6. What cues or prompts seem to help the child learn (e.g. verbal, gesture, demonstration, etc.)? Does the child require minimal help from the teacher or intrusive prompts such as manual guidance?
7. What other apsects or conditions in the environment seem to help or hinder learning?
    a. How long can the child attend to an activity?
    b. Does the child learn better 1:1 or in a group?
    c. Can the child perform the same typ[illegible]tivity in a variety of settings (e.g. different people, different materials, etc.)?
8. What does the child like? What incentives might motivate his behavior?
9. Does the child respond to natural or artificial consequences?
10. In what way is the child's behavior affected by a change in type or frequency of rewards? Does the rate or type of reinforcement required to maintain behavior interfere with or limit generalization of the behavior to other situations?

NOTE: The model presented in this chapter does not arise out of any single program, but the values in it very much reflect a year the senior author spent at the TEACCH program at the University of North Carolina, Chapel Hill. We wish to acknowledge the influence of Eric Schopler and other TEACCH staff members on this model.

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AN EDUCATIONAL PERSPECTIVE OF AUTISM: IMPLICATIONS FOR CURRICULUM DEVELOPMENT AND PERSONNEL DEVELOPMENT

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Until the passage of PL 94-142, very few students with autism were afforded an education. Most were excluded from public schools and were able to receive an education only if they happened to live near one of a handful of private programs or could prevail on public school officials to "fudge" on the diagnosis and accept them under another label (Donnellan-Walsh, 1976). Teacher training institutions did not usually address the educational implications of autism, as their future teachers would be unlikely to encounter youngsters with autism in their classrooms.

Since the enactment of federal and state mandates, the situation has changed. These same youngsters are entitled to a free, appropriate education, at public expense, in the environment least restrictive of their personal liberties. That which had been a "charity" is now a civil right under PL 93-312 (Section 504) and the Fourteenth Amendment (Martin, 1979). With several years' experience, it seems appropriate to ask some questions about the implementation of the legislation, its impact on tho students, and the adjustments the educational community has made in terms of program development, service delivery, and personnel preparation to meet the needs of this particular group of learners. A good first step is to look at the quality of educational programs now being offered these students and to judge whether they are, in fact, appropriate and provided in the least restrictive manner.

Observations of classrooms in dozens of states and provinces, interactions with hundreds of teachers and administrators, and consultation with many colleagues leads to the unfortunate conclusion that educators and parents ought to have serious concerns about how these students are being taught, what they are being taught, and where, with whom, and when they are receiving instruction. Concerned parents and professionals should also ask the important question, "What can we do about it?".

QUESTIONS RELATED TO INDIVIDUAL EDUCATIONAL PROGRAMS

How Are These Students Being Taught?

The questions related to technology are perhaps the easiest to address, although the answers are often disappointing. Fortunately, technologies for facilitatiing the educational progress of these students do exist (e.g., Lovaas, 1977; Koegel, Russo, and Rincover, 1977), and many are being used in school programs. Despite the overwhelming evidence that a highly structured, data-based empirical approach is necessary, far too many school programs are still weak, poorly articulated, and based on nebulous notions of psychoeducational, developmental, or analytic therapy. Less often now, we are hearing comments such as, "We consider autism a mental illness, so in our program the classroom is 'time-out' from school" (from a public school administrator in Missouri in 1977). However, we continue to hear such comments as, "I try not to impose myself on the child; I let her choose the activities she prefers" (from a public school teacher in Wisconsin in 1980), or "He knows how to behave, and so we have decided not to work with him until he decides to stop self-stimulating" (from a public school administrator in Alaska in 1979).

Even in classrooms which use behavioral approaches, the methods of educating students with autism too often attempt to replicate the laboratory settings in which the technology was developed. There is over-dependence on one-to-one instructional arrangements in small clinic-like cubicles.

Finally, both structured (behavioral) and unstructured (psychoanalytical) programs are often based on an inadequate knowledge of interventions necessary to deal with many of the severe behavior problems sometimes presented. Procedures used to manage inappropriate behaviors are too often negative (e.g., the use of time-out boxes), used without seeming awareness of the legal or ethical issues involved (Martin, 1979; Donnellan-Walsh, 1976), and implemented without a careful consideration of non-punitive alternative strategies (LaVigna and Donnellan-Walsh, 1976).

What Are These Students Being Taught?

Instructional activities in many classes for students with autism are irrelevant, artificial, age-inappropriate, non - functional, and based on curricula which may or may not be suited to the developmental needs of normal pre-schoolers. The following example (from the author's experience) is all too typical:

> Recently a seven year old boy with the problem of autism was observed during his fifteen-minute "cognitive" and "language" sessions in a one-to-one arrangement. The child is quite well behaved but essentially mute and displays few functional skills. The cognitive development activities included touching the biggest of three purple bugs on a ditto sheet and sorting yellow felt square from red felt apples. During the language session he was asked to label or to imitate the label of various objects (including a yellow plastic bunny, a toy airplane, a plastic fork, a bottle of glue and a toy radio) and pictures including a camera, rock, fish, cloud, coyote, wolf, a man sweeping, a boy kicking, a girl cutting, a girl opening and a boy feeding). When the speech and language specialist was asked why these items were chosen she responded: "It was arbitrary; we just wanted him to learn to imitate."
>
> The child's parents objected to his program whereupon school district officials brought a well known consultant from another state. The consultant proclaimed the speech and language specialist "one of the best I have ever seen." In addition, she then assisted the staff in developing a new individualized educational plan (IEP) for the child without consulting the parents. The IEP included the objectives and goals found in Table 1 (see two pages following) along with six other disconnected objectives (e.g., tracing letters of the alphabet). Subsequently, school district personnel and the consultant seemed surprised that the IEP was challenged by the parents.

Where and With Whom Are These Students Being Taught?

It is not infrequent for students with autism to be transported long distances in order to attend a homogeneous "autistic" classroom in a segregated, handicapped-only facility.

Table 1
IEP Goals for a Severely Handicapped Student

GROSS MOTOR/PHYSICAL EDUCATION (Recommended by a Local Education Agency)

LONG RANGE GOALS	SHORT TERM OBJECTIVES			SPECIAL MEDIA MATERIALS	EVALUATION SCHEDULE	DATE COMPLETED
	CONDITION	BEHAVIOR	CRITERION			
1. B. will face forward and walk backward on 8 foot plank unassisted.	1. Upon Request	1. B. will walk 6 steps backward across plank with fading assistance.	3 out of 3 times		Not less than weekly	
	2. Upon Request	1. B. will walk 6 steps backward across plank without assistance.	2 out of 3 times		Not less than weekly	
	3. Upon Request	1. B. will walk 4 feet backwards across plank with fading assistance.	3 out of 3 times		Not less than weekly	
	4. Upon Request	1. B. will walk 4 feet backwards across plank without fading assistance.	2 out of 3 times		Not less than weekly	
	5. Upon Request	1. B. will face forward while walking backward on plank with fading prompts for 3 feet (assisted or unassisted).	3 out of 3 times		Not less than weekly	
	6. Upon Request	1. B. will face forward while walking backward on plank with not more than 2 reminders to keep walking.	2 out of 3 times		Not less than weekly	

Table 1 (continued)

GROSS MOTOR/PHYSICAL EDUCATION

LONG RANGE GOALS	SHORT TERM OBJECTIVES			SPECIAL MEDIA MATERIALS	EVALUATION SCHEDULE	DATE COMPLETED
	CONDITION	BEHAVIOR	CRITERION			
	7. Upon Request	1. B. will walk 3 feet backward on plank while facing forward prompts.	3 out of 3 times		Not less than weekly	
	8. Upon Request	1. B. will walk 3 feet backward on plank while facing forward without prompts.	2 out of 3 times		Not less than weekly	
	9. Upon Request	1. B. will walk 8 feet backward on plank while facing forward with fading prompts.	3 out of 3 times		Not less than weekly	
	10. Upon Request	1. B. will walk 8 feet backward on plank while facing forward without assistance.	2 out of 3 times		Not less than weekly	

Such arrangements preclude programming which involves nonhandicapped peers and others. The students are seldom given the opportunity to generalize the skills they learn in school to other environments, and are rarely taught the skills necessary to survive independently or semi-independently in non-school environments.

When Are These Students Being Taught?

Classroom schedules often provide good indications of how staff prioritize the skills their students need to learn. Recently, a major educational agency published guidelines for school districts which would be developing classrooms for students with autism. The suggested schedule for classrooms which would serve these students is presented in Table 2 (see following page). (Since this publication has been recalled, the citation has been omitted). Following such a schedule, it seems assured that, after 11,340 hours of educational opportunity over 12 years of schooling, the students would realize 1,800 hours of bathroom; 2,340 hours of snack, choices, circles, and goodbye's; 2,880 hours of playground; and assuming that "centers" equals "instruction," 2,520 hours or 2-2/3 years of instruction. Unfortunately, approximations of such a schedule can be found in too many classrooms for students with autism and other severely handicapping conditions.

AN HISTORICAL OVERVIEW

If the examples presented above were unique or isolated instances, they could be dismissed as tragic aberrations of the educational system. Rather than being exceptions, these samples are unfortunately representative. It is critical that educators ask why. Why are available technologies not being applied appropriately in a wider variety of settings? Why are curricula so artificial and nonfunctional? Why is it that students with autism often attend no regualar school campuses nor enjoy systematic interactions with nonhandicapped peers? Why is programming for severely handicapped students often so unrelated to vital life functioning? An examination of the history of public education in American and the history of research in the field of autism itself provides some insight into current educational shortcomings.

Table 2

Recommended Schedule for a Classroom Serving Students with Autism (Recommended by a Major Education Agency)

8:15 - 8:30	Buses arrive. (Aide A meets them, supervises in playground).
8:30 - 8:45	Playground. (Teacher supervises; Aides A and B set up their stations).
8:45 - 8:55	Restroom. Aide B takes the girls. Teacher and Aide A helps the boys.
8:55 - 9:15	Morning circle time and music.
9:15 - 9:20	First center.
9:20 - 10:10	Second center.
10:10 - 10:30	Snack time and free choice. Aide B goes for break.
10:30 - 10:40	Aide B returns. Restroom procedure as before.
10:40 - 11:00	Recess supervised by Aide B. Aide A and teacher go for break.
11:00 - 11:25	Third center (all staff present).
11:25 - 11:30	Clean up, sit in circle, get ready for lunch.
11:30 - 11:40	Restrooms - procedure as before.
11:40 - 12:00	Lunch in school cafeteria. Aide A goes to lunch (return 12:30). Teacher, Aide B and two student volunteers assist in cafeteria and with subsequent restroom.
12:00 - 12:30	Art or some other scheduled activity. Teacher goes to lunch (return 1:00). Aide B, student and parent volunteer supervise.
12:30 - 1:00	Playground recess. Aide B goes to lunch. Aide A, student and parent volunteers supervise.
1:00 - 1:10	Restroom procedures. Teacher, Aide A and parents supervise.
1:10 - 1:25	Group activity.
1:25 - 1:30	Sing goodby, get ready to go home.
1:30 - ——	End of day, transportation arrives. Children are loaded on appropriate vehicles by parent volunteers. Staff makes records and plans next day.

The Nature of the Public Education Model in the United States

Recent legislation governing the education of handicapped children has imposed a myriad of new requirements on the public educational system. Such requirements include, for example, individual assessment followed by placement according to an individual educational plan which is to reflect the unique needs of each child, as determined at least by parents, teachers, administrators, and the child, if appropriate. Contrary to these demands, the implicit and explicit direction of our public school system since the beginning of this century has been toward a model that fits the "myth of the melting pot" and that leaves all educational decision-making in the hands of the professionals. Real individualization and lay input into decision-making have been alien to the system (Iannoccone, 1979). Setting objectives and choosing activities thus become a pro forma exercise to fit into the already determined classroom schedule. The system continues to behave in ways most familiar to it, with little understanding of the real intent of recent legislation: namely, to consider unique needs for each student.

Fortunately, many professionals are attempting to change the public educational model into one which is more responsive to the needs of individual learners. In the case of students with autism, however, educators often fall short because so little information has been available to them regarding the needs of these students and the characteristics of effective educational services. This has been due, at least in part, to the historical distance between autism research and the ongoing educational community.

Autism Research and Educational Services

In the past, when educators rejected persons with autism, the information and service void was filled by persons outside of education, particularly mental health workers and psychologists. As educators attempt to accommodate the needs of autistic students, there is little in their own profession in terms of direction, experience, curriculum strategies, or service delivery models to assist them. With the exception of a few fine books that address some of the learning needs of these students (e.g., Wing, 1974; Lettick, 1974), teachers and others must look to the research literature in behavioral psychology. School personnel who are attempting to assess the long-term educational needs of these students often find only medical, psychiatric, and psychometric research. Because of the episodic rather than longitudinal nature of this research, educators are likely to find little with direct application to the public school classroom.

Nature of research in autism. A review of the existing research literature in the field of autism reveals no data on longitudinal, comprehensive instructional approaches that could enable students to develop the skills actually needed to live, work, and play in complex and heterogeneous community environments. This is not to detract from the value of the research in the field. Tremendous progress has been made in twenty years and much of it is a direct result of that research. However, the approach to the solution of educational systems problems for autistic and other severely handicapped students has been limited. Typically, researchers in autism have focused on basic research questions. While such research may ultimately benefit large numbers of children in the future, it rarely provides direct assistance to the instructional and organizational problems facing a classroom teacher. A research may focus on a methodology to teach X without ever questioning or justifying the students' need to do or to know X. While a tension between basic and applied research is common in many fields, it is particularly so in autism, since most of the available educational services literature in the field has been generated by researchers.

Many contributions of researchers in the field of autism were made by people vitally interested in the diagnosis of, causes, and cures for the syndrome (e.g., Ornitz and Ritvo, 1968; Rimland, 1964; Rutter, 1968; Rutter, 1978; Schopler, 1978). Such lines of research were valuable in the past if only because they provided more parsimonious and plausible explanations than were generally offered by mental health personnel and psychoanalysts in particular (e.g., Bettelheim, 1967). Such research continues to be extremely valuable because of the critical need to find the biological basis of the syndrome, but is often less than relevant to the comprehensive educational needs of students with autism.

Perhaps, understandably, much of medical and psychiatric literature is concerned with finding a cure for autism. Even in the area of behavioral psychology, which has made outstanding contributions to the education of these students, the emphasis has been more on "curing" or "ameliorating" certain problems than on the design and implementation of long-term instructional services. The primary concerns of many behavioral psychologists have been oriented toward greater definitional precision and understanding of various facets of learning styles and characteristics, and the elimination of high-rate, socially unacceptable actions (e.g., Metz, 1965; Lovaas, Litrownik, and Mann, 1971; Koegel and Schreibman, 1977). Psychological literature, therefore, is replete with demonstrations that some "subjects" with autism can learn isolated skills under circumscribed conditions. Similarly, there is much written about the deceleration of unacceptable behaviors. Given the saliency of many of these behaviors in terms of rate, durability, the physical danger they present to the child and others, and the interference with opportunities to develop other skills, it is certainly understandable why many professionals focus upon these characteristics. The literature demonstrating that autistic self-stimulatory and self-mutilating behaviors could be replaced with other less deviant actions, as well as research which looks at learning problems correlated with autism, offer tremendous contributions to the education of autistic students. Nevertheless, this literature is limited and, while it must continue, it should no longer confine or define behavioral research in the field of autism. Guess, Horner, Utley, Holvost, Maxon, Tucker, and Warren (1978) contend that, while the present technology of teaching severely handicapped students is far from complete, our current understanding of "how" to teach seems more advanced than our knowledge of "what" skills to teach and the sequence of teaching these skills.

Confronted with problems of the magnitude associated with autism, it is understandable that many researchers did not relate to questions of what skills were being taught, the rationale for their selection, or the characteristics of instructional location or delivery. Consequently, these issues have often been ignored by conscientious teachers and others who, upon reading the behavioral literature, struggle to replicate research strategies, content, and measurement systems in the classroom without regard to the longitudinal needs of any given student. Too often educators have been unable to generalize from the research which demonstrates effective techniques (albeit with irrelevant content) to the utilization of those techniques in more educationally meaningful ways. Thus, there is often no theme or educational "gestalt" to programs provided for individuals with autism. Rather, the educational services often consist of disjointed, functionally irrelevent "behavioral targets."

THE NEED FOR NEW STRATEGIES IN DEVELOPING PROGRAMS FOR STUDENTS WITH AUTISM

It is time to begin to address broader issues regarding the education of students with autism and to begin to identify other informational needs to the scientific community. Educational services for these and other severely handicapped students must be based upon more than presently available research. Again, this is not to diminish the value of the research that has been done to date. In many cases, to replicate the materials, teaching strategies, tasks, and objectives used by the researcher is counterproductive to the educational needs of the children served. While there is certainly the technology to teach a child to identify a cup, draw a triangle, count backward, and discriminate blue from purple (Koegel, Glahn, and Nieminen, 1978), the telling question for the educator is: "So what?". So what if Johnny can touch three sequenced red, white, and blue blocks -- if he cannot tell his mother what he wants for supper, cannot act appropriately on a public bus, and cannot play a simple game with peers or siblings?

Available research provides convincing evidence that:

1. Students with autism can learn many skills (Lovaas, 1977);

2. Students with autism can be taught to perform in response to cues from a wide variety of persons (Koegel, Russo, and Rincover, 1977);

3. Students with autism have poor generalization skills and must be taught in a variety of settings to ensure that desired skills will be performed in those settings (Koegel, Glahn, and Nieminen, 1979);

4. It is possible to teach a wide variety of personnel to deal with persons with autism, thus providing students with autism access to a greater variety of living and learning environments (Donnellan, LaVigna, Schuler, and Woodward, 1979);

5. It is relatively easy to attract large numbers of people to work with these students (Warren, 1980);

6. Autistic and other severely handicapped students can be taught age-appropriate and functional skills in natural environments (Goetz, Schuler, and Sailor, 1979).

On the other hand, data also show that 95 percent of adults with autism live their lives in the back wards of large multipurpose and dehumanizing institutions (Sullivan, 1977). The socio-political implications of why and how our nation has chosen an institutional mode as the primary domestic envirnoment for so many handicapped people is discussed elsewhere (Wolfsenberger, 1972) and is beyond the scope of this paper. Instead, it is the purpose of this paper to address the issues of what educators can do to change the outcome for these students. Lotter (1974), in his Middlesex follow-up study said that he was unable to find any noticeable effect of educational intervention on the subjects of that study. Yet, we as educators are convinced that education can make a difference (Fenichel, 1974). It is the purpose of this paper to identify some of the dimensions that must be addressed if educators are to begin to provide longitudinal and comprehensive educational services that are systematically and functionally relevant to the enhancement of the ultimate life space and functioning and, therefore, the quality of life of all persons with autism.

Tomorrow morning a child will be identified as having the problem of autism. The challenge to the educator is to ensure that this child does not end up 15 years from now in the same depersonalized and dehumanizing institutional environment as his or her categorical predecessors. The remainder of this paper will delineate some of those critical dimensions of services to students with autism.

CRITICAL EDUCATIONAL DIMENSIONS OF ACCEPTABLE EDUCATIONAL SERVICES

Since the majority of children with autism currently grow up to be adults who live in institutions, one criteria of educational change would be a significant increase in the number of students with autism who are able to participate successfully in a variety of community-based environments as adults. Brown, Nietupski, and Hamre-Nietupski (1976) referred to such a goal as the "criterion of ultimate functioning," a dynamic and fluid, yet specified and personalized, set of attributes that each person must have in order to function at maximum potential in adult community environments that are socially, vocationally, and domestically integrated. Obviously, a number of dimensions can contribute to success in effecting competent community performance by adults with severe handicapping conditions.

How and Where Students Are Taught

Instructional setting. Most programs for students with autism operate on the assumption that the classroom setting is the best place to teach most skills and that excursions beyond the classroom are "field trips" designed to "expose students to other experiences." This assumption neglects to take into account the significant generalization problems demonstrated by autistic and other severely handicapped students as shown in the chapter by Carr (1980). Koegel, Egel, and Dunlap (1979), in commenting on the experience of mainstreaming students with autism, note that one of the principal advantages of placing such students in environments containing nonhandicapped students is that it enables educators to discern the wide range of important skills these students need yet to learn. They maintain that this practice may be a moral obligation, inasmuch as it helps to showcase the most productive target behaviors for their successful development, in addition to revealing the potential that many of them have for functioning successfully in the regular classroom.

Since it is obvious that none of these students will spend his or her adult life in a classroom, it is necessary to develop curricula that relate to teaching functional skills in at least such areas or domains as community functioning, domestic living, recreation/leisure, vocational functioning, and social interactions with nonhandicapped peers. To implement meaningful programming in these areas, a significant portion of the educational experience ought to take place in the varied school and non-school environments in which they will ultimately live, work, and recreate. It is strongly urged that the notion of an "instructional setting" be expanded to include direct, systematic, longitudinal, and comprehensive instruction in a variety of non-classroom and non-school environments. The older the student becomes, the less time they should spend on school grounds and the more time they should spend in shopping centers, buses, and bowling alleys, not as passive recipients of a field trip experience but as learners who are gaining the skills needed to function in those environments. If, as Dunlap, Koegel, and Egel (1979) suggest, there is an obligation to assist students with autism in learning to adapt to normal classrooms, then there certainly must be an obligation to assist them in dealing with the natural environments in which they will ultimately be required to function.

Instructional arrangements. The extraordinary behavior and learning problems of students with autism usually require that classrooms have low teacher-student ratios. Unfortunately, many persons have interpreted this to mean that the ideal for these students is a one-to-one interaction with a teacher throughout the day. While there is no doubt that this kind of individualization will be required to teach some skills to some students under certain circumstances, educators must also be aware of the need to teach the students the skills necessary to interact with persons other than instructional personnel and to function effectively within groups. A good educational environment should contain a wide variety of instructional options, including one-to-one individualized instruction within small groups, student-to-student arrangements, and peer model-to-student arrangements (Donnellan, Falvey, Pumpian, Baumgart, Schroeder, and Brown, 1980).

Instructional technology. The learning and behavior problems presented by students with autism have contributed to the development, application, and refinement of some relatively precise technologies which can be used to enhance the probability that a given student will acquire the skills that he or she needs to learn. The discrete trial format (Koegel, Russo, and Rincover, 1977), from the field of applied behavioral analysis, is a good example. It has been demonstrated that such technology can be taught to a variety of professionals and non-professionals (Koegel, Russo, and Rincover, 1977; Donnellan-Walsh and Schuler, 1977; Donnellan, LaVigna, Schuler, and Woodward, 1979). However, this technology is associated with several potential limitations when referenced against the criterion of ultimate functioning. The very precision of the technology, the specification of stimulus cues, may preclude the student from responding with similar behavior in less precisely delineated environments. Vincent, Salisbury, Walter, Brown, Gruenewald, and Powers (in press) comment on this concern relative to the transition of young handicapped children from early childhood special education into regular education. According to these authors, while technology may clearly produce positive changes in children's performance, the literature shows that changes displayed under specific learning conditions do not easily generalize to other, more natural environments (Stokes and Baer, 1977). Thus, children may be learning to produce a behavior only in relation to highly specific antecedent and consequent conditions that do not exist in other environments. There is no doubt that highly specialized technology is necessary; it is its application and direction that should be questioned, inasmuch as the focus of special education should be to remove the technology while continuing to maintain the child's response.

One solution to this problem is to teach the technology to a wider variety of people in the child's natural environment (Koegel et al., 1980). While this may in fact be a valid strategy for teaching a specific student a specific skill, it may not always be feasible. Educators are responsible for large numbers of students whose parents, siblings, and friends may not have the resources, inclination, skills, nor time to participate in such training. Obviously educational efforts cannot be confined to those children whose parents and others are cooperative. The solution is not to ignore the technology and all the benefits it has achieved, but rather to adapt the technology to more natural, less artificial learning and living environments.

Applied behavioral analysis in natural settings. Many educators encourage and support applied behavioral research in natural settings (Neff, Iwata, and Page, 1978; Yeaton and Bailey, 1978). Unfortunately, such research is not prevalent in the area of autism, where most research comes from clinical or institutional settings or from simulated classroom models

(Dunlap, Koegel, and Egel, 1979). Such environments do not take into account the multiple agendas that operate on a typical public school class. There are multiple public and private levels of operation, including such matters as processing subject matter information, judging student abilities, managing classroom groups, coping with emotional responses to events and behaviors, establishing procedures for routing and special assignments, distributing resources and supplies, keeping records, interacting with colleagues and administrators, and many other tasks. In special education, the "many other tasks" include activities not typically found in regular education (training aides, meeting with ancillary staff, evaluating IEP's, having conferences with parents, and so on). In real schools, difficult children cannot be assigned to a spare graduate student nor sent back to the ward as often occurs in research classrooms. The typical special education classroom, however, is itself artificial compared to natural non-classroom environments. Field research in a wide variety of natural settings would facilitate identification of the behavioral strategies necessary to better assist teachers in working with autistic students. Many of the strategies are already well documented but are not typically known by teachers of autistic students. For example, teachers of autistic and other severely handicapped students must broaden the measurement strategies at their disposal. Trial-by-trial or event-data collection may be feasible and appropriate for teaching "table tasks" in one-to-one or small group arrangements. However, strategies must be developed to monitor student performance on more complex tasks in less controlled settings. While a student may correctly board the front of the public bus on five consecutive trials, he may do it so slowly that it is unacceptable to the general public. Teachers must be sensitive to monitoring all socially important dimensions of student behavior.

Alternatives to the use of punishment. Just as it is critical that a teaching technology be developed that can be used to teach functional skills in natural environments, it is critical to develop a technology that can be used to prevent, reduce, and eliminate a variety of aberrant behaviors in classrooms and in other settings. Irrespective of the legal and ethical issues involved (Martin, 1979; LaVigna and Donnellan-Walsh, 1976; LaVigna, 1980), more and more public schools are reluctant to allow the use of aversive stimulation or exclusion in the form of "time-out" to reduce serious social/behavior problems. Even if the schools allow aversive techniques, the use of such procedures may restrict the student to the school environment because many successful aversive interventions are not appropriate in bowling alleys and other public places. The result, therefore, may be that students with autism may not learn to behave appropriately in a variety of settings. A concerted effort must be made to find applications of the technology which are feasible and acceptable in a wide variety of settings.

Naturally occurring cues and prompts. Applied research in natural environments would facilitate the development of strategies to help autistic and other severely handicapped students to respond to naturally occurring stimuli and prompts (Donnellan et al., 1980; Falvey et al., 1980). While the literature typically tells teachers to "fade out prompts," there are no clear directions how to "fade in" those prompts on cues which are available to nonhandicapped students. If teachers are to train their students to shop in supermarkets, then teachers need to know how to inventory such environments for naturally occurring cues, such as the actions or words of the cashier which signal that he is finished adding the bill and wants the money. Students who are being taught to swim at the local YMCA can be taught to respond to the cue that empty lockers are the ones without locks on them or that the swimming instructor blows the whistle when it is time to go into and out of the pool. Potential research questions related to generalization, stimulus overselectivity, and other learning characteristics are endless.

Repeated practice. Many teachers have been encouraged to teach to criteria in the context of massed trial or repeated practice formats. That is, teachers often feel the need or are encouraged from reading research literature to provide relatively large numbers of teaching trials in relatively short periods of time. However, it is an empirical question whether, for some kinds of learning, repeated practice strategies implemented in artificial settings might not actually impede the acquisition of concepts and operations. In other words, it is possible that teaching the appropriate label for "cup" by arranging ten opportunities to respond to questions such as "What is this?" and "What do we need to drink?" and to interact with cups by taking them out of the dishwasher, stacking them, drinking from them, and so on, might ultimately be preferable to ten or twenty two-choice discrimination trials where students are asked to

"Show me cup?". A clear danger of the widespread use of repeated practice strategies is that teachers may limit their curriculum to those activities that readily lead themselves to massed trials, further encouraging the use of artificial tasks, materials, and settings. We do not wish to encourage more loosely structured instruction, but to teach teachers to systematically arrange for more naturally occurring learning situations.

Strategies for Deciding "What" to Teach Students with Autism

Rationale behind current curriculum development strategies. The activities presented in the typical classroom for children with autism are often irrelevant, non-functional and based on notions of curricular content which are best suited to normal pre-schoolers. Even if one ignores the weak and unstructured classrooms which seem to view these students as "emotionally disturbed" and look only to those which strive to more appropriately program for these children, one is still struck by the seeming irrationality of the choice of activities. This artificiality is so pervasive that it would seem to reflect some underlying notions or logic about curriculum development.

Guess and his colleagues (Guess, Horner, Utley, Holvoet, Maxon, Tucker, and Warren, 1978) have identified two kinds of logic. The first is developmental logic which follows cognitive theories of learning in assuming that the education of severely handicapped children should follow the sequence in which normal children learn. The second, remedial logic, advances the assumption that severely handicapped children are not the same in their abilities and deficits as normal children, and that their education should concentrate on identifying the skills and skill sequences that will improve the child's ability to interact successfully with his environment. Remedial logic also emphasizes the success of past efforts through which severely handicapped children learned difficult skills, and places little emphasis on their "readiness" to master each element.

Guess et al. (1978) characterize developmental logic in terms of horizontal program sequencing, and remedial logic in terms of vertical program sequencing. Both approaches have strengths and weaknesses. According to the authors, developmental logic tends to focus too heavily on developmental states, and this, in turn, implies maturational determinants of behavioral acquisition and undue emphasis on readiness skills. The dependency of this approach on characteristics of the child makes it quite possible to rationalize failure as due to these characteristics, rather than to a failure of the curriculum or the teaching procedures. On the other hand, the vertical sequencing of remedial logic can lead the educator to assume that almost any behavior can be taught once it has been objectively identified, task analyzed, and flow charted. When this kind of over-confidence in our current technology fails to produce change in a child, its proponents may revert to a perceived need to teach more basic "prerequisite" skills, a response that corresponds to the emphasis on readiness skills proposed by the developmental approach. However, vertical sequencing does combine the technology for teaching with the optimism that skills can be taught.

Strict adherence to either approach presents particular difficulties to students with autism, whose learning difficulties include developmental discontinuity, unusual rule learning skills (Hermalin, 1971), stimulus over-selectivity, and generalization problems (Carr, 1980). Students with autism and other severely handicapping conditions need a curriculum that is functional rather than artificial, integrated rather than isolated, longitudinal rather than episodic, and that has minimal reliance on instructional inference (Donnellan, Flavey, Pumpian, Baumgart, Schroeder, and Brown, 1980).

Of course, any activity can be seen to have potential functional value, particularly if one relies on a "readiness" model. In the earlier example where a child was assigned the additional IEP goal, "to trace all of the letters of the alphabet," school officials argued that this would "make him ready for the normal classroom." Given the disparity between his skills and the comprehensive demands of a regular classroom placement, it is highly unlikely that mastery of this skill alone would have supported placement in the regular classroom.

In deciding whether to target a particular skill for training, teachers and parents should ask, "If this child does not learn to perform this skill, will someone have to do it for him?" For example, "If he does not learn to put together one more five-piece formboard, will someone have to do these things for him?". Probably not. However, if he does not learn to cut the food on his plate, put the coin in the vending machine, or put on his shirts, someone will have to do these things for him.

Of course, not every activity can be judged by this definition; there are single-person leisure time activities such as playing solitaire or listening to music which are probably better judged by other standards such as "normalization" (Wolfensberger, 1972). The definition is, however, a simple and efficient way of judging relative functionality, particularly as students enter adolescence and young adulthood.

Organizing curricular content. In addition to a greater emphasis on functionality in curricula for students with autism, alternatives to the popular approach of categorizing curricula into discrete content areas, such as gross motor, self-help, and language, must be developed. These areas are not, in fact, discrete, and such categorization often leads teachers to think about a student's day in a disjointed and fragmented manner. This fragmentation places the burden of synthesizing the various daily activities on the student whose acquisition and performance problems are often defined by the absence of or by deficiencies in the ability to synthesize information from a variety of sources.

One alternative strategy for generating and organizing educational curricula for severely handicapped students is the ecological inventory strategy described by Brown, Branston, Hamre-Nietupski, Pumpian, Certo, and Gruenewald (1979). This approach is particularly appropriate for meeting the unique needs of students with autism and the reader is referred to their work for an in depth presentation of the strategy. Briefly, they suggest the following steps:

1. Divide the curriculum into the most relevant curricular domains;

2. For each domain, identify the environments in which a severely handicapped student is functioning or might function in the future;

3. Divide the environments delineated in each domain into subenvironments;

4. Delineate the activities that occur in each sub-environment; and

5. Delineate the specific skills needed in order for severely handicapped students to participate in as many of the activities as possible.

Rather than working with traditional developmental curriculum domains, Brown, Falvey, Vincent, Kaye, Johnson, Ferrara-Parrish and Gruenewald (1979) suggest domestic, vocational, recreational/leisure, community functioning, and interaction with nonhandicapped persons as non-mutually exclusive curriculum domains and recommend that each be represented in the IEP of each student. Within each domain, the current and subsequent environments which are presently available or could be potentially available to the student should be studied in detail. This ecological inventory of current and subsequent environments would include at least the following steps:

1. Conduct a nonhandicapped person inventory including analysis of skills used by the nonhandicapped to function in a particular environment;

2. Conduct a severely handicapped person inventory including a determination of the precise skills necessary for a given severely handicapped student to participate in the activities which take place in that environment; and

3. Conduct a discrepancy analysis comparing the skills manifested by the nonhandicapped and the present skill level of the handicapped student.

The information generated by this kind of analysis would provide critical information concerning the skills on which the student needs instruction in order to participate in appropriate activities. It is this kind of information which would form the basis of the student's IEP goals and which would reflect present as well as long-term needs. This approach seems particularly appropriate for students with autism for several reasons:

1. Parents of children with autism often report that one of their greatest concerns is that their children have nothing to do when they have free time (LaVigna and King, 1975);

2. Public community functioning activities are particularly appropriate for students with autism because of their insistence of the preservation of sameness (Kanner, 1943) and their need to function in the terribly inconsistent "real world";

3. Children with autism are such rote and ritualistic performers that an emphasis on subsequent environments is necessary if alternative environments will ever be open to them.

The use of alternative approaches to curriculum development such as the "ecological inventory strategy" to assist in the development of individualized curricula will force us to re-examine our notions about instructional environments and settings in ways which will better accommodate to the generalization problems and other cognitive and social deficits of students with autism.

The Location of Educational Settings

Historically, when children with autism were excluded from public schools, their parents joined other advocates to provide direct educational services and to work politically to obtain these services at public expense. The result of the first objective was that most programs for these children were private and, therefore, located in settings which were likely to be isolated from other, nonhandicapped students. When the political efforts of the parents helped in the passage of legislation requiring that all children be educated at public expense, many parents were so accustomed to segregated educational service delivery models that they did not question when their child was placed in an "autism class" in the segregated handicapped-only school.

Programmatically, the position offered here is that there is not now, nor has there ever been, any inherent value in isolating this or any other population of students with handicaps. Isolation occurs for reasons other than the educational and social needs of students. According to O'Brien (1979), separate facilities for the handicapped can serve a political purpose in identifying what the district is doing "for" these individuals, thus impressing parents, legislators, and the citizenry in ways that can lead to approval of dollar appropriations. Isolation of handicapped people can also be done in the name of convenience, allowing professionals to centralize special services in the mistaken belief that it is more convenient for adults to move children. Isolation can also suit administrative purposes, in the sense that it may be easier to monitor one or two places that are responsible for special children than to monitor the education of these children all over town. Isolation may also continue to seem appropriate to those who continue to rely on yesterday's solutions because they are slow to change.

For handicapped students to be automatically segregated is stigmatizing, an impediment to their ability to function in desegregated environments, and a violation of their civil rights under the "least restrictive alternative" provision of PL 93-312, Section 504 (Martin, 1979). More specifically, there is substantial data and experience to indicate that students with autism have socialization deficits and have some difficulty generalizing from "treatment" to "non-treatment environments." If the criterion for choosing a setting is the development of a program which will maximize the possibility that the children served will be able to live their lives as members of the public community, then the preparatory experiences, including the location of services, should approximate characteristics of that community as much as possible. There is no programmatic rationale for a segregated environment or for homogeneous grouping. Unfortunately, for the moment the homogeneous grouping of five or six or more students with autism may be necessary because of the limited numbers of trained staff. However, alternative solutions must be designed and implemented immediately. Although there are no data indicating that students with autism are likely to learn normalized social relationships from each other, there is a great deal of evidence from parents that siblings and friends often do relate to and develop affectionate relationships with those children.

Although homogeneous groupings may be temporarily necessary, there is no acceptable rationale for segregated environments. Classes for students with autism ought to be in the same educational facilities as those of their nonhandicapped chronological age peers. It is both stigmatizing and inappropriate to place a class of adolescents with autism down the hall with the normal kindergarten. If students with autism are to learn to act appropriately, they must have access to people and environments that demand appropriate behavior.

Similarly, if future citizens are to be more tolerant of the unusual behavior these children often exhibit, they need to learn early and often that what is unusual need not be frightening and probably is not dangerous. The normal schoolmates of these students have a good chance of becoming substantially handicapped themselves (Brattgard, 1977), or of becoming the parents of severely handicapped children. Certainly they have the right to learn about citizens who might look or behave differently. The Constitution does not demand that people like one another, but it does require that they tolerate one another (Galloway, 1979).

Some would argue that the success of many fine private programs for students with autism justifies their education in isolated settings. The counter is, of course, that private programs for children with handicaps have typically rated their success on their ability to return a percentage of their students to less restrictive environments. Moreover, the issue is not private vs. public; it is the elimination of the automatic, arbitrary, unnecessary, and counterproductive segregation of these students. There is every reason to believe that, if the skills, technology, and experience of these private programs were available in chronological age-appropriate, desegregated school settings, the success rate and the lives of these students would be enhanced. Past models and solutions clearly are not sufficient if educators are to make the difference, ultimately, in the life space of these students. Perhaps seemingly radical solutions must be tried. At least one major non-public school program for children with autism, Division TEAACH out of the University of North Carolina, described in the chapter by Olley (1980), has been successful in operating many classrooms for these students in regular public school buildings. The governance, funding, policy issues, and so on, are of course unusual, but the needs of this population as well as the problems of declining resources and enrollment which face the larger educational community today may argue for many more radical, flexible, and unusual solutions.

IMPLICATIONS FOR PERSONNEL PREPARATION

Status of Personnel Preparation

Generally, personnel preparation in the field of autism has been inadequate. Depending upon the area of the country, training programs are either nonexistent or inappropriate. The absence of training programs is attributable to the fact that, since students with autism were for so long excluded from public schools, there was no reason for personnel preparation programs to deal in depth with the educational programs of autism. A study conducted by Smith (1977) found that there were very few preservice or inservice training programs which prepare teachers in the area of autism. Recently, legal mandates requiring states to educate all children have caused teacher training programs to begin to deal with the needs of autistic children. Many of these emerging programs, however, fail to prepare teachers with the skills necessary to work with autistic children and youth. One reason for this may be the fact that autism is a low-incidence disability and usually subsumed by a larger category in most training programs. Frequently, autism is erroneously viewed as an emotional disturbance, and potential teachers of students with autism are prepared in the same manner as potental teachers of students who are emotionally disturbed. Such a course of training is not likely to equip teachers with the skills necessary to manage stereotypic or self-destructive behavior, to build communication, or to teach basic social interaction skills.

Presently, most teachers of students with autism receive their training in emotional disturbance, learning disabilities, behavior disorders, or some other category in which the student population is more mildly impaired than are autistic students. Smith (1979) found that the majority of teachers she surveyed did not feel adequately prepared to work with the autistic students who were in their classes. Such an unfortunate finding is understandable for a number of reasons.

First, it is not appropriate to train teachers of autistic classes as part of a teacher training program in emotional disturbance because the target children are not emotionally disturbed. Instead, they have severe, organically based cognitive and linguistic deficits, which are present at or shortly after birth and which are likely to last throughout life (Ritvo and

Freeman, 1977; Warren, 1980). The educational needs of children with autism have little in common with most of the other students who are labeled emotionally disturbed. Although many "intellectually normal" students with autism share many characteristics and academic needs with mildly impaired populations and often may be appropriately placed in classes for the mildly handicapped, their needs remain more comprehensive and extend beyond the classroom setting.

Second, although students with autism are likely to exhibit many bizarre and even dangerous behaviors, placing primary emphasis upon these behavior disorders does not relate to critical comprehensive habilitative needs. Teachers must also know how to deal with the cognitive, communication, social, vocational, community functioning, and other needs which are usually quite different from the needs of other students who, for example, may be referred out of their regular classrooms primarily because of "acting out" behavior.

Since teacher certification is closely linked to the way the public officials categorize children, it will be necessary to remove autism from the emotional disturbance, learning handicapped, or other inappropriate category in which it is presently found in federal and state regulations in order to impact significantly on training. The question of whether autism should be a separate category or be part of a broader category, but one which more adequately reflects the needs of these students, is an important one (Warren, 1980) with wide-ranging political and educational consequences.

It should be obvious that teachers who will be working with students having the problem of autism must have at their command most of the same competencies as those needed by teachers of other severely handicapped students since students with autism share a need for long-range, comprehensive, functional education in natural environments. Of course, the educational needs of students with autism and students with other severe handicaps are not totally congruent. For example, teachers of students with autism will probably not have to deal with many of the physical handicaps that are frequent among the severely handicapped. Similarly, teachers of physically or multi-handicapped students will seldom encounter the ritualistic compulsions, unusual learning styles, bizarre behaviors, or unusual language characteristics which are so often found in autism. Nevertheless, the field of the severely handicapped provides some delineation of the competencies needed to work successfully with autistic populations.

What Should We Teach Teachers Who Will Work With Students With Autism?

Many leaders in the field of education for severely handicapped students have identified teacher competencies that are necessary for working with students with autism. For example, Haring (1975) cites six minimum skills essential for teachers of the severely handicapped:

1. The ability to task analyze and sequence the instructional curriculum with prerequisite, intermediate and terminal behaviors specified for each skill;
2. The ability to record and evaluate student progress on a daily basis;
3. The ability to select, purchase and construct and/or design special instructional materials;
4. The ability to teach and maintain attention and responses using reinforcement contingencies;
5. The ability to work with parents; and
6. the ability to function as a member of an interdisciplinary team.

According to Smith (1979), with minor variations, similar competencies or competency lists were suggested or developed by Allen, 1976; Perske and Smith, 1977; Scheuerman, 1976; Sontag, Burke and York, 1976; Stainback, Stainback and Maurer, 1976; and Wilcox, 1977). These lists of teacher competencies, while usually excellent, tend to reflect a clinical or "target skill" approach to teaching. Hopefully, many educators will take them and incorporate them into the broad range of skills necessary for teaching students in school and non-school environments. The concern here is that teacher trainers may not generalize from this circumscribed information to the more comprehensive needs of teachers. If one views teacher training in terms of the ultimate functioning of students, it is apparent that teachers need to learn the processes for identifying, assessing, promoting, monitoring, and evaluating comprehensive and longitudinal goals that each of their students must possess now, and in the future, in order to succeed in a heterogeneous post-school society. Taking such an approach, competencies such as those referred to above can help generate clusters of competencies which more adequately reflect the longitudinal and comprehensive needs of teachers and their students with autism.

Teachers who work with students with autism and other severely handicapping conditions should possess at least the following competencies:

1. The ability to assess and document across a variety of activities and settings the student's learning strategies, performance, rate, and degree of generalization and stimulus control difficulties;

2. The ability to assess the particular language characteristics and communicative needs of an individual student and to develop appropriate programs which incorporate systematic language and communication development as part of all curriculum domains and instructional activities;

3. The ability to inventory a variety of current and future environments selected in consultation with parents and/or guardians, in order to identify important activities performed by nonhandicapped persons;

4. The ability to identify and incorporate the natural cues and correction procedures on which nonhandicapped persons rely;

5. The ability to inventory and analyze the skills necessary for a given student to perform in a wide variety of natural environments;

6. The ability to choose and prioritize, in consultation with parents or guardians, a variety of instructional activities which will enhance the ability of each student to perform effectively in the natural environments delineated;

7. The ability to coordinate the unique needs of all of the students in the class so that the class can function as a whole, yet meet the needs of each student;

8. The ability to use a variety of instructional strategies to effect student learning;

9. The ability to use a range of appropriate behavioral management strategies with due consideration given to the legal, ethical, and administrative issues involved, as well as to the natural environments in which the strategies might have to be implemented;

10. The ability to monitor student progress and to make program decisions based on data collected in a variety of school and non-school environments;

11. The ability to select clusters of activities so that the individual student can use what is learned in one activity or environment to enhance his learning in another.

Where Should Teachers of Autistic Students Be Trained?

It is often argued that teachers of students with autism should be trained in the schools and communities as close as possible to those in which they will work because it is into those schools and communities they will be integrating and training their students. For example, it seems appropriate to inservice each teacher with his or her own students, student teacher aides, administrators, and ancillary staff. However, as there are so few teacher training programs and such a great need on both preservice and inservice levels, such a strategy seems impossible.

In preservice training, the experience of the classroom itself has tremendous influence on student teacher behavior, even to the point of shaping student teachers in ways that are not in keeping with what they are learning in university lecture halls (Iannoccone and Button, 1964; Copeland, 1979). This, coupled with the fact that student teachers need the opportunity to practice what they are learning with actual children, suggests that inservice and preservice training needs cannot be clearly separated. The Rand report on federal support for educational change (Berman, 1973-1978) suggests that long-lasting change in educational programming is highly dependent upon local school conditions. Packaged materials and dependence on external consultants to change teacher behavior do not result in enduring change unless the change is adapted to local needs. A study of California's early childhood program (Baker, 1976) similarly concluded that state programming policy would receive only lip service attention unless the people on site were willing to adopt the policy and unless the innovations met local needs and conditions. "Hands on" training has been shown to be highly successful when teaching teachers, aides, speech and language specialists, administrators, and other school personnel the technology necessary to work effectively with autistic students (Koegel, Russo, and Rincover, 1977; Donnellan-Walsh and Schuler, 1977). In addition, the skills necessary to train others in this technology can be taught to many naive persons. Part of the success of these projects was their adaptability to local needs.

It is reasonable to assume that such a hands-on and locally adapted model could be expanded to include a wide variety of the processes and skills teachers need to acquire to meet the comprehensive needs of students with autism. Using a field-based training approach, we could then identify persons and programs that are on the cutting edge of the education of students with autism and other severe handicaps and with them develop regional training institutes. The purpose of the regional institutes would be to train university level personnel who are doing preservice training of teachers as well as state department of education personnel who are responsible for identifying and disseminating "promising new practices" in the field of education. These trainees would then be responsible for inservice and preservice training on the local level through State Departments of Education and local universities.

In order for this or any approach to be successful, care would have to be taken to ensure that any one approach is not seen as "the model" or training package but one that teaches school personnel how to utilize processes and techniques which have been identified as successful with other autistic and severely handicapped students, and to adapt them to the individual and unique needs of the students in their local programs.

SUMMARY

This paper has reviewed education practices presently found in classrooms for students with autism. It is apparent that changes, including the development of more functional curricula; the location of classes in chronological age-appropriate, integrated settings; the use of age-appropriate and functional materials and naturally occurring cues and prompts; the expansion of classroom boundaries to include natural environments; and a rethinking of approaches to personnel preparation are necessary if society is to reverse the statistics which show that adults with autism are almost invariably condemned to lives in segregated institutions.

The efforts of educators alone will not be sufficient to effect such wide-scale change. Real differences will not be felt until all who consider themselves advocates begin to challenge the political and economic realities which currently thwart and splinter efforts to make community living alternatives available for all of our citizens (see MacCoy, 1980). Educators have often abdicated their responsibility and, as a result, given credence to those who claim that students with autism cannot be taught to participate in society in any meaningful way. They must now accept responsibility to develop educational approaches which emphasize longitudinal, comprehensive functional educational programming and which utilize the best of what research has to offer. The scientific community must also be convinced that it is now time to move more research into natural settings. The task is difficult, but essential, if the vicious cycle of isolation, rejection, and wasted human potential is to be ended.

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PROGRAMMING THE DELIVERY OF INSTRUCTION FOR AUTISTIC CHILDREN

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The 1960's and 1970's have produced important gains in our understanding of and ability to educate autistic children (for reviews of these advances, see Dunlap, Koegel, and Egel, 1979; Koegel, Egel, and Dunlap, in press; Lovaas and Newsom, 1976). Much of this progress has resulted from careful and applied research into the learning characteristics of these children and the teaching techniques used in their treatment. Until recently, the bulk of this research has concentrated on remediation through the manipulation of environmental consequences for various behaviors (e.g., Carr, 1977; Egel, in press; Solnick, Rincover, and Peterson, 1977). Lately, however, attention has begun to focus on the arrangements of antecedent stimuli and an understanding of how instructional programming can influence the behavior of autistic children (e.g., Carr, Newsom, and Binkoff, 1976; Koegel and Egel, 1979; Koegel, Russo, and Rincover, 1976; Schreibman, 1975; Schreibman and Koegel, in press). We are nevertheless at a relatively early stage in understanding many of the variables that influence the effectiveness of instructional delivery. For this reason, we at Santa Barbara, along with a number of other research groups, have been conducting investigations into ways that educational instructions can be presented in order to enhance the learning of appropriate responses. This chapter will provide a general overview of research on instructional delivery and present some recent findings that may serve to illustrate the special impact that antecedent stimuli can have on the behavior of autistic children.

SELECTION OF TARGET BEHAVIORS

Before examining specific variables related to the delivery of individual instructions, one should consider this topic in the more general context of educational programming. The arrangements of educational instructions involve far more than maximizing the effectiveness of trial-by-trial instruction. For example, the development of appropriate curricula, instructional objectives, and task sequencing are areas that merit careful planning and assessment. Unfortunately, these areas suffer from a lack of empirical evaluation and, thus, are still decided largely by theory and/or "common-sense" approaches. However, the general lack of verification cannot excuse us from taking these matters seriously. Given a capability for effective instruction, these areas involve the determination of the content and sequence of instruction. Clearly, decisions pertaining to curriculum will largely influence the direction and ultimate success of a student's schooling and functioning in adult life.

While the scope of this chapter will not permit an extensive examination of the issues pertaining to curriculum programming, other chapters in this volume present current thought and practice in these critical areas. The approach to selection of target behaviors that we have followed in Santa Barbara conforms rather closely to that which has been so well-articulated by Brown, Branston, Hamre-Nietupski, Pumpian, Certo, and Gruenewald (1979). Our general approach has been briefly described in previous publications (Koegel, Egel, and Dunlap, in press; Schreibman and Koegel, in press), and can be summarized by the following priciples. First, attempts are made to remediate behavioral excesses (e.g., tantrums) and deficiencies (e.g., lack of language) that tend to emphasize deviance and inhibit normal functioning. Second, work is focused on those skills that will be functional (and, thus, reinforced) in day-to-day living. Third, attempts are made to establish responses and response classes (e.g., nonverbal and verbal imitation) that can clearly be used as building blocks for the development of additional behaviors. An attempt is also made to teach as many behaviors as possible in the environments in which they will be ultimately performed. Teaching in natural environments reduces the problems of generalization (Carr, 1980) and underlines the benefits of parent training and parent involvement (Lovaas, Koegel, Simmons, and Long, 1973; Schreibman and Koebel, 1975). A strategy that has proven useful in our selection of target behaviors has been to observe a child interacting in a future "target" setting. For example, if we plan to mainstream a child into a regular kindergarten classroom, we might observe the autistic child in that classroom prior to admission. We then focus our training on those behavioral excesses that most notably distinguish the child from the other children, as well as the behavioral deficiences that might inhibit productive interaction with these future classmates (cf. Russo and Koegel, 1977).

In this approach to education, intervention begins as early as possible (cf. Lovaas, 1980). One of the advantages to early intervention is the potential for long-term programming. When one considers the possibilities of shaping and chaining behaviors over a period of 12 or more years, the final goals can be relatively complex. Each target behavior should be considered in the context of such long-range programs. This approach, then, would not advocate teaching a child to put a puzzle together or to place pegs in a pegboard unless those behaviors are steps in a program toward building a more complex behavior. For example, placing pegs in a pegboard might be valuable in relation to teaching some of the fine motor coordination involved in manipulating a pencil, which in turn might be a very early step in a long-range program for teaching the child to write compositions or letters to a friend. However, it has been our observation that many teachers frequently forget the long-range objectives and may leave a child at an early step (such as pegboard work) for periods of many years. Our approach, however, is to encourage the most rapid advance possible to behaviors that will allow the child to engage in functional activities and in activities that are similar to those of his nonhandicapped peers.

This approach to educational programming considers each individual target behavior in the context of long-range programming and in the context of age-appropriate functioning in the child's natural environment. However, one must also examine the components of the individual instructions presented during a given teaching trial in order to achieve the most effective teaching of that target behavior.

The focus of this chapter is to consider the antecedent instructions of individual trials in detail in order to aid in the understanding of how this type of programming can enhance the education of autistic children.

PROGRAMMING OF INSTRUCTIONAL DELIVERY

Instructions, and antecedent stimuli in general, have played a role in educational research with autistic children for many years. Lovaas and Newsom (1976) emphasized the importance of antecedent stimuli, suggesting that teachers' instructions are tantamount to the teaching of "meaning" to autistic children. Despite the acknowledged importance of antecedent stimuli, most relevant research has investigated their effects in an indirect manner or as part of a package designed to establish complex behavior. For example, a number of studies have used modeling, combined with reinforcement, to establish a variety of verbal and nonverbal behaviors (Hartung, 1970; Koegel and Rincover, 1974; Lovaas, Berberich, Perloff, and Schaeffer, 1966; Metz, 1965; Nordquist and Wahler, 1973; Risley and Wolf, 1967; Stevens-Long and Rasmussen, 1974; Wheeler and Sulzer, 1970). Although such studies have contributed to the literature on teaching procedures, they do not specifically address the issue of improving the effectiveness of antecedent stimuli or instructional delivery.

More pertinent are the series of studies concerned with the development of effective prompting procedures. These studies have sought improved methods for transferring stimulus control from prompts to target instructions (Rincover, 1978; Schreibman, 1975). In a related area, Koegel and Egel (1979) used prompts in the form of verbal encouragements (e.g., "keep working," "come on") to facilitate task completion. These instructions succeeded in promoting the children's enthusiasm and motivation to complete time-consuming activities.

Additional aspects of antecedent stimulus conditions have been studied. Sailor and Taman (1972) investigated methods of employing various stimulus objects in efforts to train prepositional usage ("in" versus "on"). They found that children responded correctly more often when different objects were paired with different prepositions. Carr, Newsom, and Binkoff (1976) found that by filling intertrial intervals with non-task-related "conversation," they were able to improve performance to task-related instructions and reduce the disruptions which had previously been evoked by the instructions.

The above studies are among the first to directly investigate means of improving instructional delivery in efforts to facilitate the learning and the general behavior of autistic children. Other authors (e.g., Goetz, Schuler, and Sailor, 1979) have indicated such investigations are extremely encouraging and suggest that additional research will be quite profitable. As autistic children are noted to be extremely unresponsive to environmental (antecedent) events (Ornitz and Ritvo, 1968; Rutter, 1966; Schopler, 1965), this suggestion seems warranted. In response to such issues, the authors have recently conducted a number of investigations pertaining to instructional delivery. Three of these studies are described below. The studies have significance for at least two reasons: (a) they are illustrative of the diversity and impact that research in instructional delivery can produce, and; (b) they represent variables and techniques that can be easily applied in instructional settings.

Using Instructions to Facilitate Responding to Relevant Cues

The first of these studies (Koegel, Dunlap, Richman and Dyer, Note 1), examined methods of manipulating antecedent stimuli in an effort to help autistic children attend and respond to relevent instructional cues during complex teaching tasks.

Since the early 1970's, research has shown that autistic children face serious problems when confronted with instructions that require attention to a number of cues simultaneously (e.g., Koegel and Wilhelm, 1973; Lovaas and Schreibman, 1971; Lovaas, Schreibman, Koegel, and Rehm, 1971; Reynolds, Newsom, and Lovaas, 1974; Shover and Newsom, 1976; Schreibman and Lovaas, 1973). That is, these children will typically respond overselectively on the basis of only one component of a stimulus complex. For example, if successful performance on a task requires attention to auditory cues (such as a verbal instruction) and, at the same time, visual cues (such as the physical referrent of the instruction), autistic children will frequently respond on the basis of only a restricted portion of those cues (such as only the visual cues) and, thus, fail at the task. As most educational activities demand attention to a number of relevant simultaneous (or nearly simultaneous) cues, the implications of this type of responding are numerous and severe (e.g., Koegel and Schreibman, 1974, 1976; Lovaas, Koegel, and Schreibman, 1979; Rincover and Koegel, 1975). As examples, stimulus overselectivity has been related to the problems autistic children face with generalization of a response from one setting to another (e.g., Rincover and Koegel, 1975), with transfer of stimulus control from prompting to instructional stimuli (Koegel and Rincover, 1976; Schreibman, 1975) and with the development of appropriate instructional control in general.

In efforts to overcome this problem, researchers have investigated a number of encouraging strategies. Schreibman (1975) and Rincover (1978) developed innovative means of manipulating antecedent stimuli to bypass some of the learning difficulties of autistic children. These investigators developed successful ways to avoid the use of unrelated (and distracting) prompt stimuli. Such unrelated stimuli inhibit the acquisition of appropriate stimulus control during discrimination training (Koegel and Rincover, 1976). Schreibman and Rincover used within-stimulus prompts that served to exaggerate and emphasize the relevent dimension of training stimuli. These prompts were then faded, along with the same relevent dimensions that were necessary for successful performance on the target behaviors. Thus, no transfer of attention was required across multiple cues, and thus the problem of overselectivity was circumvented.

While such work offers a useful and encouraging technique, it does not directly address the issue of overselectivity occurring across modalities and, further, the application of within-stimulus prompts may be confined to a limited set of teaching activities. Another approach has attempted to remediate overselectivity directly by teaching the children to respond on the basis of multiple cues (Koegel and Schreibman, 1977; Schreibman, Koegel, and Craig, 1977). Koegel and Schreibman (1977), using a series of conditional discriminations, found that following this training sequence, at least one autistic child had learned to respond to new discriminations by attending to multiple, relevant cues. Other work has suggested that overselectivity may be reduced by using intermittent, rather than continuous, schedules of reinforcement during the later stages of discrimination training (Koegel, Schreibman, Britten, and Laitinen, 1979). This research is clearly promising but not as yet used in many educational settings, nor has its applicability been widely tested.

As overselective responding continues to present serious problems in the education of autistic children, the following investigation sought an easily applied method of directing the attention of autistic children to all of the necessary cues presented by complex discrimination tasks. A study was conducted to increase the probability of children's responding to relevant cues. Supplementary instructions were provided directing the children to verbalize those cues during discrimination training. The rationale was that, if the children could be shown to attend to each of the relevant cues prior to responding, their learning should be substantially facilitated (cf. Zeaman and House, 1963).

Three autistic children from regular public school and clinic settings participated in this study. The children were primarily echolalic, but had acquired small, functional vocabularies. They worked on a number of discrimination tasks described as problematic by their teachers and clinicians. All tasks required responding to both auditory and visual cues, and were typical of those scheduled in the children's pre-academic curricula, e.g., "yes/no" questions of affirmation ("Is this a chair?"), rudimentary discriminations involving quantity ("Which is more/less?").

In the context of a multiple baseline design, we attempted to teach the discriminations using standard teaching procedures (Koegel, Russo, and Rincover, 1977; Schreibman and Koegel, in press) and found no significant improvement on any of the tasks. A closer look at exactly how the children were responding during these baseline trials indicated that one could readily detect cues which were presenting problems. In many instances, the children apparently had been responding on the basis of the relevant visual cues (such as the different-sized piles of stimulus objects) but were not attending to the crucial components of the auditory cues (such as the verbal instruction, "Which is more?"). In fact, several children actually answered different questions than the therapist had asked. With other child/task combinations, children were apparently responding to the auditory cues but not to the relevant visual cues. For example, a child might be gazing intently at the corner of a stimulus card instead of looking at the picture on the card. In order to direct attention to all of the necessary cues, in the treatment condition, modified instructions included an additional response requirement, i.e., we required the children to verbally label the particular cues that had previously presented a problem. If the child had been having problems with auditory cues, he/she was directed to repeat the important parts of the instruction before responding. For example, in the task, "Which is more?," the child would be prompted to say the relevant word "more" before responding. Thus, we could be certain that the child had "attended" to the word "more." If the problem was with visual cues, the child was prompted to label relevant dimensions of the visual stimuli before responding to the target instruction. For example, a yes/no question (e.g., "Is this a chair?") might be preceded by the question, "What is this?". Correct labeling of the picture on the card provided assurance that the child was "attending" to the relevant visual cues.

This change in instructional format was successful in promoting acquisition of each of the target behaviors. While their baseline responses hovered around chance, all of the children learned their respective tasks after a few treatment trials.

While the procedure outlined above seems effective and relatively easy to employ in classroom settings, further research is needed to clarify its applicability and expand its boundaries. For example, it is possible that the children observed in this investigation offered baseline data that were particularly transparent with regard to identification of problematic cues. Future studies may be needed to develop strategies for detection of problematic cues. In addition, further research may be necessary to develop analogous procedures for use with nonverbal children. Such children, who obviously cannot be expected to verbalize problematic cues, may be in even greater need of such assistance as they tend to show a higher incidence of overselectivity than echolalic children (Wilhelm and Lovaas, 1976).

Rate of Instructional Delivery and Learning

A second study, assessing the rate of presenting educational instructions (Koegel, Dunlap, and Dyer, 1980) was pursued because some teachers had suggested the importance of optimizing the rate of instructional delivery for particular children. Rate is a variable which has drawn considerable attention in the educational and experimental psychology literature. It has typically been studied through systematic manipulations of the duration of the intertrial interval (ITI). The importance of such manipulations has been articulated by Holt and Shafer (1973), who indicated that the length of the ITI is a "temporal variable that may influence number of trials to criterion, final performance reached and stability of final performance" (p.181).

Aspects of the above hypothesis have been studied in a variety of contexts with infants (Watson, 1967), children (Bogartz and Pederson, 1966); Cross, 1970), and adults (Bourne and Bunderson, 1963; Bourne, Guy, Dodd, and Justesen, 1965; Grove, Pettibone, and Martin, 1973), as well as infra-human organisms (Croll, 1970; Holt, 1973; Holt and Shafer, 1973). Also, Carnine (1976), in a study with low-achieving first graders, found that increasing the rates of presenting instructions (essentially shortening the ITI's) served to increase correct responding and participation and reduce off-task behavior.

Despite the apparent concensus that rate of presentation is an influential variable, there has been no systematic evaluation of this possibility with autistic children. The authors therefore examined ITI manipulations, with the purpose of providing improvements in teaching autistic children. The literature cited above, and clinical and classroom experience, led the authors to suspect not only that ITI durations would be influential, but also that relatively short ITI's might be particularly effective in teaching new behaviors. The investigation described below compares two ITI durations (or rates of instructional delivery) in the contexts of both repeated reversal and multiple baseline designs.

The children participating in this study were all diagnosed autistic but represented a wide range of abilities and characteristics. All of the tasks were discrimination problems selected from the children's regular school and clinic curricula. Rates of task acquisition were compared under two conditions: relatively fast rate of instructional delivery (ITI's averaged about 1 sec.) and a relatively slow rate of instructional delivery (ITI's averaged about 4 to 5 sec.). During some experimental sessions, a high degree of control over the teacher-child interaction was established, in order to avoid the influence of unwanted confounding variables. During other sessions there was relatively little guidance so as to maintain all aspects of a typical classroom or clinic activity.

Regardless of the context, all of the results obtained from this investigation were consistent. The rate of instructional delivery proved to be a highly influential variable and for all of the children studied, the short ITI duration, or relatively fast condition, was superior (see Figure 1). Although the results of this study are consistent and have been replicated in a large number of educational settings, we are not yet sure of the variables that determine optimal ITI durations. Among the relevant variables suggested in the literature are task characteristics, such as task complexity and acquisition vs. maintenance; and child characteristics such as age, memory span, attention, and level of off-task behavior (e.g., Bourne and Bunderson, 1963; Croll, 1970; Holt and Shafer, 1973; Watson,

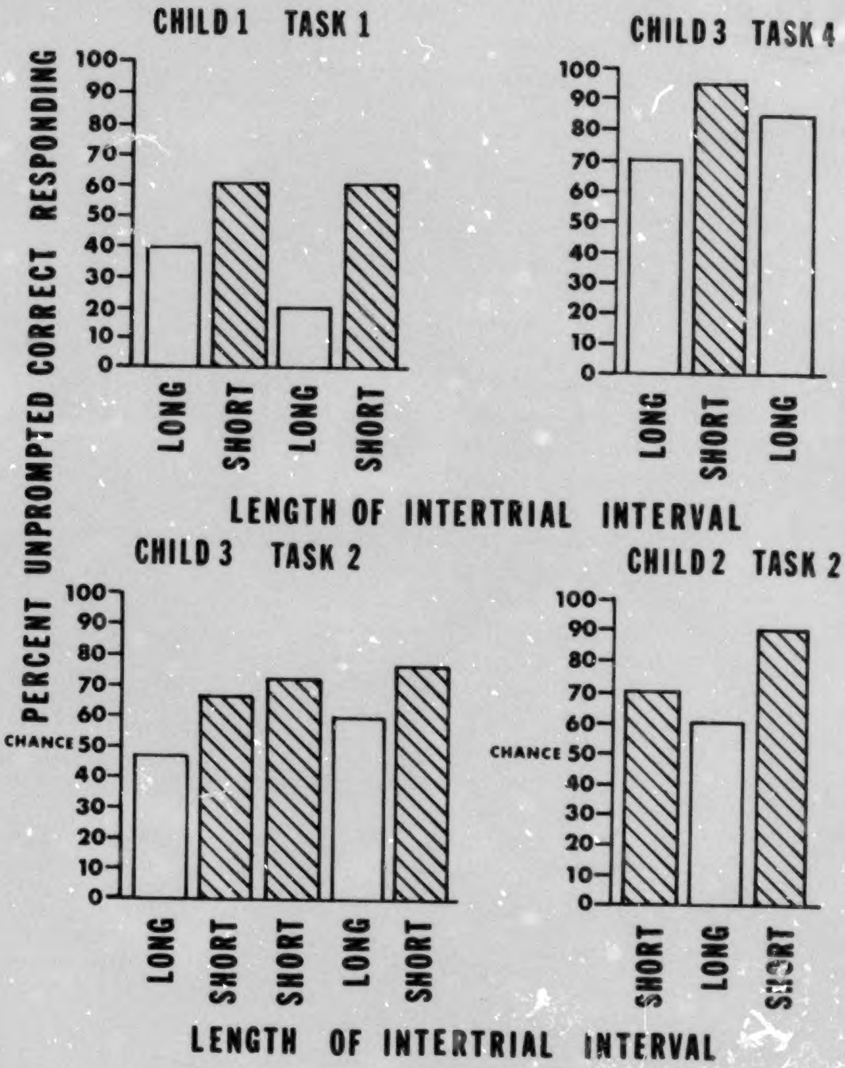


Figure 1. Influence of rate of instructional delivery on performance.

1967). The results suggesting the superiority of relatively fast rates of presentation with autistic children may be especially related to hypothesized short-term memory deficits (Hingtgen and Bryson, 1972) or it may be that relatively short ITI's serve to prevent the occurrence of self-stimulatory or other off-task behaviors between trials. Some related research (cf. Koegel and Covert, 1972; Risley, 1968) and the authors' anecdotal observations suggest that this latter possibility may be most reasonable but this has yet to be verified. Whatever the reason, it is clear that the rate with which instructions are presented is a functional variable that can be instrumental in autistic children's learning.

Varying Tasks (Instructions) to Improve Discrimination and Enthusiasm

The two studies described above illustrate methods of manipulating educational instructions to produce more successful responding by autistic children. The first study used instructions to draw attention to necessary cues which had previously been ineffective. The second study showed that the rate at which instructions are presented is an important variable and that a relatively fast rate seems to be superior. Both studies considered these variables only in relation to their influence on children's learning. The third study also considered the influence of instructions on children's general enthusiasm for learning.

Dunlap and Koegel (in press) investigated the influence of the amount of variation with which instructions are delivered within a session. With autistic children (and others), it has been common to present tasks in a serial and relatively unchanging manner. That is, a particular task is presented repeatedly throughout a session until a predetermined performance criterion is achieved or until the session ends. Only then is a new task introduced.

It is not clear that this is always the best strategy. While few directly related studies are available, some literature on stimulus novelty and variation (Cantor and Cantor, 1964; Faw and Nunnally, 1968; Hutt, 1975; Young, 1969) suggests that an unchanging method of stimulus presentation (i.e., the same task for a number of consecutive trials) may not be optimal for evoking attention or successful performance on discrimination tasks. For example, Ross stated that "the repeated presentation of the same form tends to reduce the effectiveness of a stimulus" (1977, p. 119). He goes on to suggest that variation can be instrumental in increasing the effectiveness of a stimulus and in sustaining student attention over extended periods of time. Further, Zeaman, House, and Orlando (1968) found that the insertion of novel stimuli into otherwise unchanging visual discrimination tasks significantly improved the performance of retarded children. Other research has shown that facilitative effects resulted when antecedent stimulus variation was provided in a number of training contexts (Bilsky and Heal, 1969; Granzin and Carnine, 1977; Greeno, 1964; Panyan and Hall, 1978; Schroeder and Baer, 1972; White, 1965, 1966; Britten, Ruggles, and LeBlanc, Note 2).

Considering such findings, this study sought to evaluate the differential effectiveness of two methods of delivering instructions. In the context of a multiple baseline design, which included a brief reversal for one child, the authors compared two conditions. In the constant task condition, a single task was presented repeatedly for a consecutive number of trials. All the tasks were drawn from the children's regular curricula and were reported as being problematic. These sessions ranged in duration from five to ten minutes. In the varied task condition, the same tasks were presented but were interspersed with a number of other tasks, all drawn from the children's curricula. No task in this condition was ever presented more than twice in succession and particular tasks averaged about one presentation out of every seven total trials.

All the children who participated in this study had been assigned a primary diagnosis of autism. They represented a fairly wide range of the disorder. They all lived at home, attended public school special education classes and were enrolled in an autism research and treatment program at the University of California at Santa Barbara. Their teachers were well-trained undergraduate and graduate students. In order to control for possible bias, teachers in the majority of sessions were naive with respect to the purpose of the investigation. Precautions were taken to provide a balance for the number of trials per session, number of target trials per session, sessions per condition, and overall length of the sessions.

Data were collected on correct responding to each instruction throughout the study. In addition, for one of the children, all of whose sessions were videotaped, data were obtained pertaining to the child's affect and general behavior as she engaged in the prescribed activities.

The results were consistent across children and showed that performance under the varied task approach was generally superior to performance under the constant task condition (see Figure 2). Not only did the varied task strategy produce higher per-

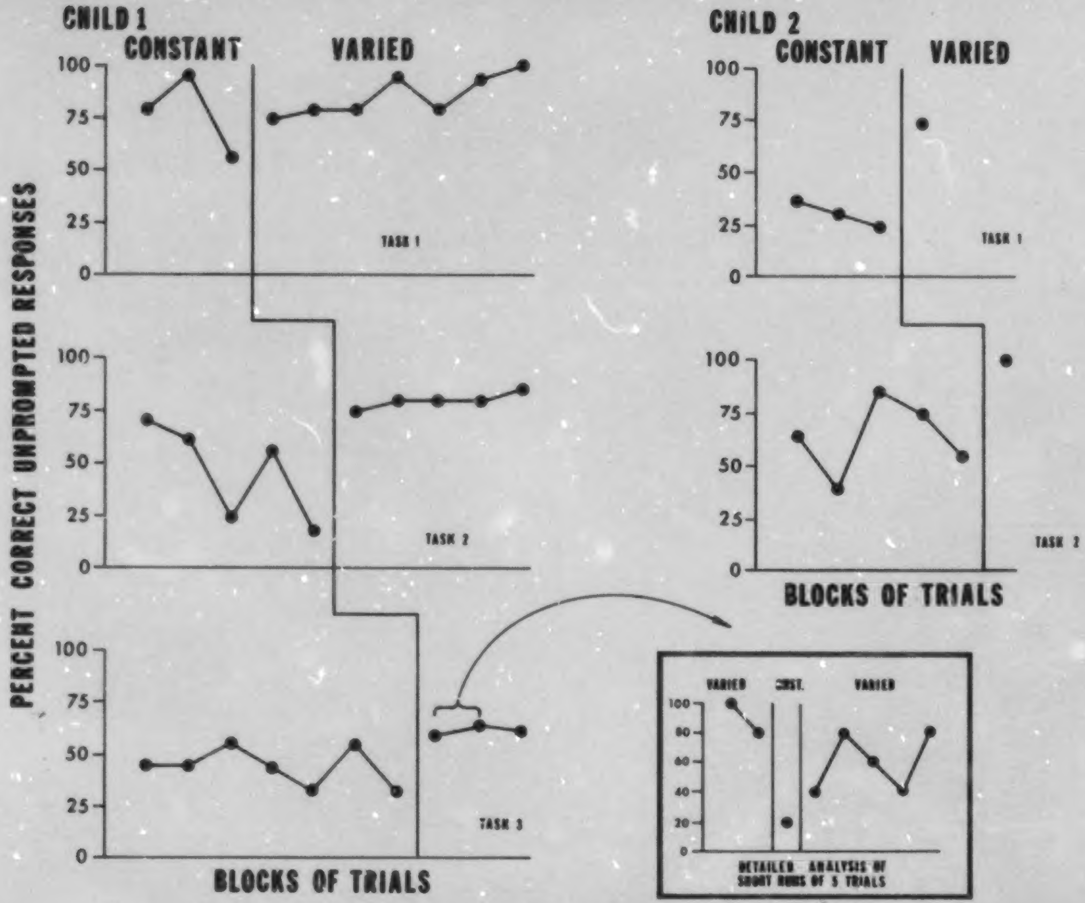


Figure 2. Influence of varied task approach on performance.

centages of correct responding, but, perhaps more significantly, the trends under the two conditions were highly dissimilar. The constant task condition showed a lack of improvement and declining trends while the varied task condition produced increasing trends.

These data become more striking when subjected to more detailed analyses. One of the children, a nonverbal child who was functioning at a relatively low level, was observed to cease responding altogether as the constant task condition progressed. That is, when an instruction was presented, this child often failed to attempt any kind of response at all. As Figure 3 shows, these "no responses" became more frequent as the constant task condition continued, but upon introduction of the varied task condition, the number of "no responses" dropped to nearly zero.

For a higher-functioning child (where sessions were relatively long), examination of within-sessions trends in correct responding proved extremely revealing. The trends in each of the constant task sessions showed substantial declines from the beginning to the end of the session. That is, as these sessions progressed, the child's percent of correct responding decreased. In marked contrast, the varied task sessions always produced increasing trends or continuously high and stable percents of correct responding. This was true regardless of length of the sessions (sometimes exceeding 30 minutes), number of target instructions, or the total number of instructions presented (see Figure 4).

The consistency of these results led us to suspect that "boredom" may have been increasingly evident during the constant task condition and that the relative novelty of the varied task sessions produced a heightened and prolonged motivation and involvement in the activity. For the child whose sessions were videotaped, we were able to more clearly assess this possibility. Each videotaped session was divided into three-minute segments, and the segments were transferred in random order onto new videotapes. These taped segments were shown to two observers naive with respect to all aspects of the experiment and naive concerning the syndrome of autism. The observers independently scored each 3-minute segment on four six-point scales. The scales assessed the child's level of enthusiasm, happiness, interest (in the task), and general behavior (on-task versus off-task behavior). Scale definitions are listed in Table 1.

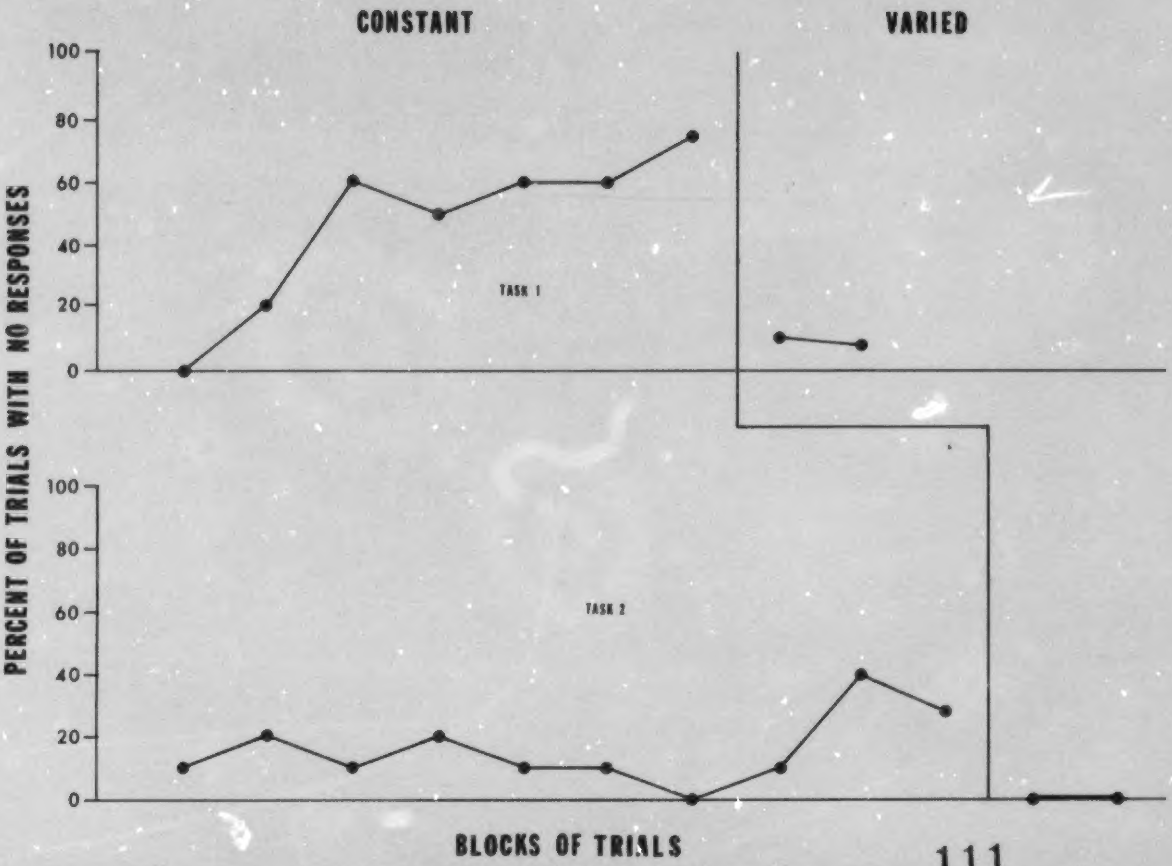


Figure 3. Influence of constant and varied task conditions on "non-response."

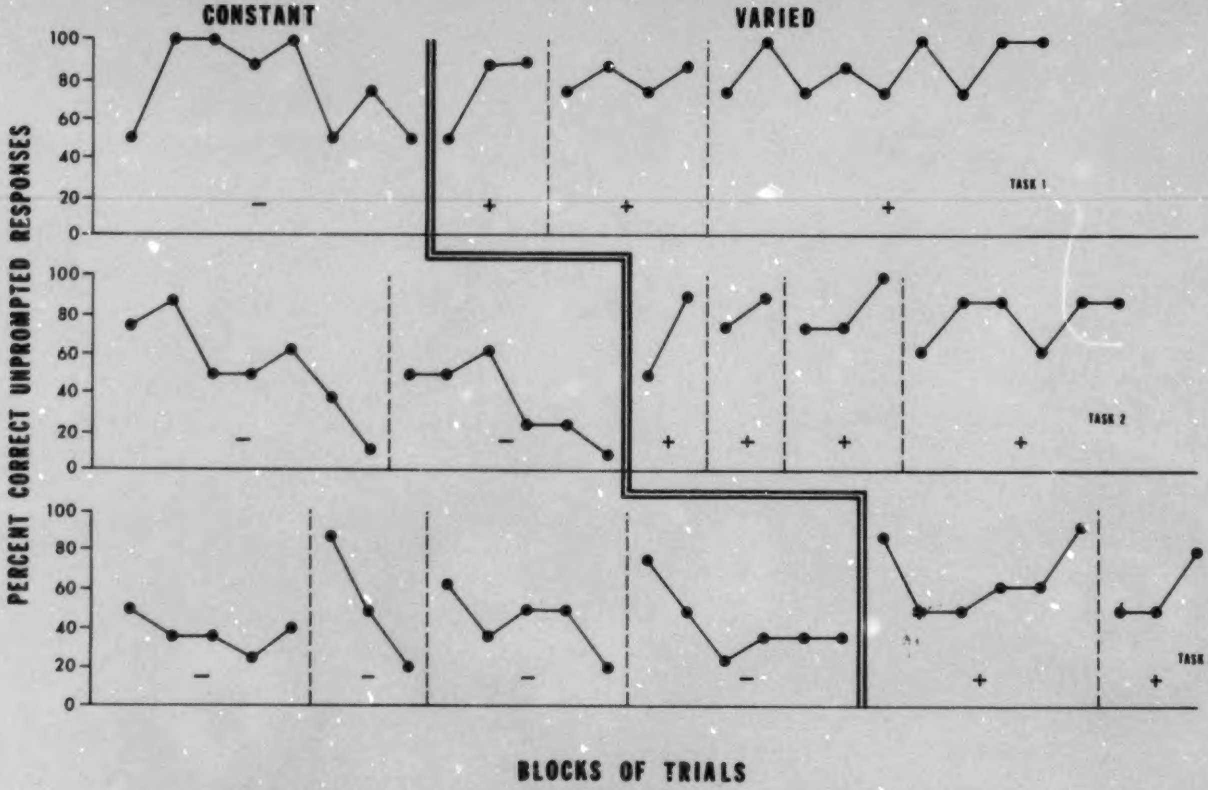


Figure 4. Influence of constant and varied task conditions on correct unprompted responses.

Table 1

Rating scales for child affect (enthusiasm, interest and happiness) and general behavior. Based upon procedures in Dunlap, G., & Koegel, R. L., Motivating autistic children through stimulus variation. Journal of Applied Behavior Analysis, in press.

1) ENTHUSIASM

Negative Enthusiasm	Neutral Enthusiasm	Positive Enthusiasm
Tries to leave the room, throws tantrums, kicks, screams, throw material around the room, cries, pushes the task away or refuses to perform the task (score 0)	Generally complies with instructions, but tends to get fidgety; there are moments of staring or inattention, "toying" with stimulus materials, wriggling feet and on (score 2)	Performs task readily and frequently attends to clinician or stimulus materials between trials (score 4).
Remains in chair, but generally does not comply with instructions; behavior consists primarily of vocalizations and motor behavior unrelated to the task - yawning, rocking, loud tapping, and so on (score 1)	Complies with instructions, but does not perform task readily; exhibits neutral behavior by occasionally focusing on (watching) clinician or stimulus materials between trials (score 3)	Attends to task quickly, laughs or smiles while working on the task, predominantly watches clinician and stimulus materials intently, performs extra behaviors related to the task and performs appropriate creative behaviors with stimulus materials (score 5)

2) INTEREST

Disinterested	Neutral Interest	Interested
Child looks bored, non-involved, not curious or eager to continue activity. May yawn or attempt to avoid (or escape) situation. Spends much time looking around and little time attending to task. When child does respond, there may be a long response latency (score 0 or 1, depending on extent of disinterest).	Neither particularly interested nor disinterested. Child seems to passively accept situation. Does not rebel but is not obviously eager to continue (score 2 or 3, depending on extent of interest).	Attends readily to task: responds readily and willingly. Child is alert and involved in activity (score 4 or 5, depending upon level of alertness and involvement).

Table 1 (Continued)

3) HAPPINESS

Unhappy	Neutral	Happy
Cries, pouts, tantrums, appears to be sad, angry or frustrated. Child seems not to be enjoying self (score 0 or 1, depending upon extent of unhappiness).	Does not appear to be decidedly happy or particularly unhappy. May smile or frown occasionally but, overall, seems rather neutral in this situation (score 2 or 3, depending upon extent of happiness.	Smiles, laughs apprropriately, seems to be enjoying self (score 4 or 5 depending on extent of enjoyment.

4) GENERAL BEHAVIOR

Poorly Behaved	Neutral Behavior	Well-Behaved
Child is disruptive - may tantrum, attempt to leave chair or room, interrupt teacher's instructions and/or show aggression towards teacher, self or objects. Child is generally off-task-may fidget and squirm, show inappropriate vocal behavior (e.g., off-task laughter and noises) or motor behavior unrelated to task. Shows little attention to task, and may be non-compliant (score 0 or 1, depending upon extent of disruptiveness).	Child is neither very disruptive nor exceptionally attentive. Child may fidget and appear inattentive, but is not aggressive or rebellious. Generally complies with instructions, but may not do so readily (score 2 or 3, depending on extent of attentiveness).	Child sits quietly, attends to teacher and to task. Responds to instructions; is compliant and appears to try to perform successfully. May laugh or show other emotional behavior under appropriate circumstances (score 4 or 5, depending upon extent of attention and compliance).

These dimensions reflect considerations beyond levels of correct responding or even, for that matter, boredom. Rather, they were designed to assess, in a more global sense, another very important concern of teachers -- that is, the general state of enjoyment or pleasure that the autistic students obtain from their educational activities. The four scales utilized in this study were constructed to provide a measure of these variables. It was also assumed that the scales might be capable of reflecting differential effects, other than correct responding, produced by the varied versus constant task conditions.

The data obtained from the four scales showed very similar functions. They also reflected the same kinds of trends observed for the correct responding data and, further, seemed to support the notion that boredom may have been involved in the differential effects seen in the two conditions. The observers' judgments indicated dramatic reductions on all four scales as the constant task sessions progressed. That is, scores for every constant task session showed declining trends; the child apparently became less enthusiastic, less happy, less interested in the activity and more poorly behaved. In marked contrast, the varied task sessions produced relatively high and stable ratings (see Figure 5). The interobserver reliability obtained from the ratings indicates that these results were clear even to naive observers. Regardless of the number of trials, number of target trials, number of sessions, or length of the sessions, the ratings from the varied task condition were consistently higher than those for the constant task condition.

The data obtained from this study show that the strategy represented by the varied task condition (as opposed to the constant task approach) facilitated correct responding and improved the affect the general behavior of autistic children. The results seem to suggest that variation is a particularly influential variable in the behavior of autistic children. However, a number of important questions are suggested for further research. For example, it is unclear whether all of the tasks in this study were still in the process of acquisition or whether they were previously learned. Although all of the selected tasks had been reported as problematic, in several cases, high levels of correct responding during the early trials of the constant task condition suggest that some of the responses may have been learned prior to or during an early phase of the experiment. As autistic children are known to respond with marked inconsistency, the possibility exists that these target

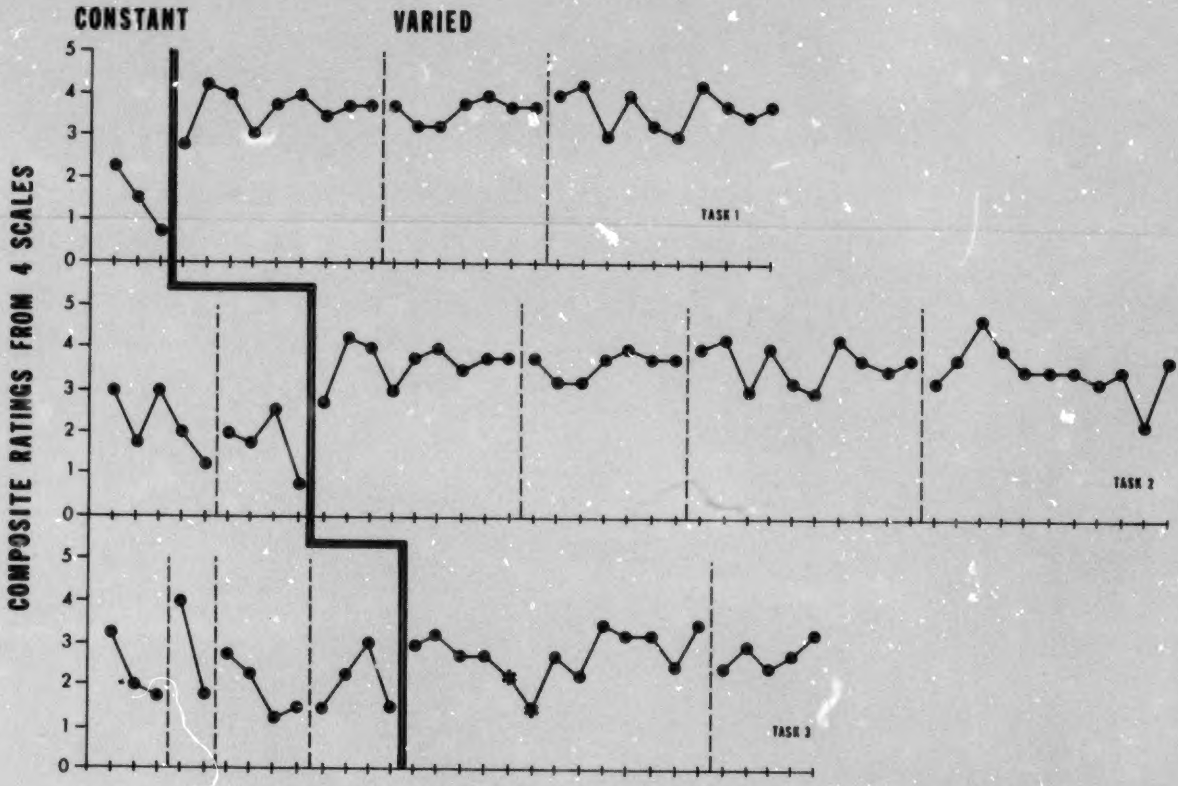


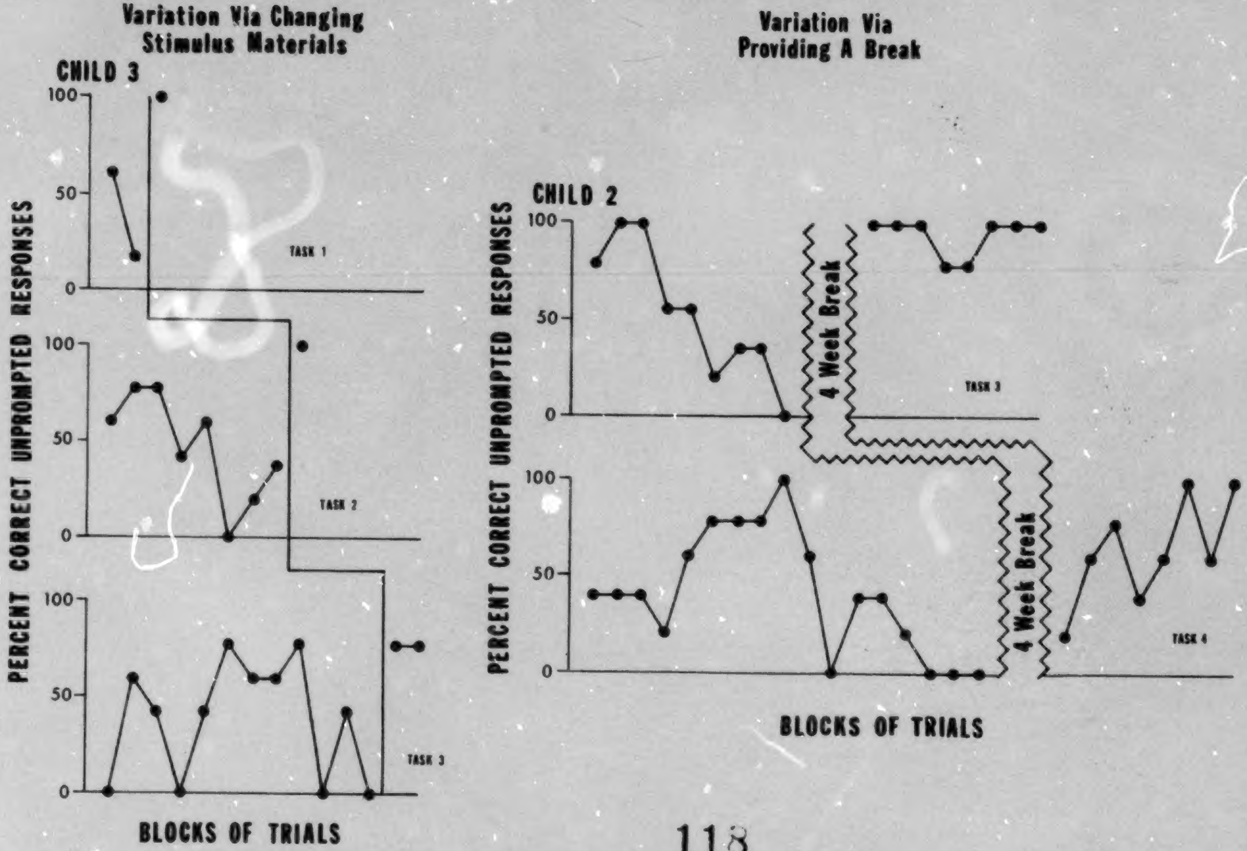
Figure 5. Composite rating of performance under constant and varied task conditions.

behaviors may have been previously acquired, despite the absence of behavioral evidence at the start of the study. Future research is needed to resolve this question. Further, it suggests a need for closer examinations of the performance criteria employed for various behaviors and increased efforts to identify new ways to detect the point at which tasks are acquired.

The present findings indicating the positive impact produced by variation suggest that other methods of introducing variation might also be effective. In brief multiple baseline analyses of this possiblity, the authors examined the effects of two additional manipulations. In the first, antecedent variation was introduced by suddenly changing stimulus materials. For example, on one task, after a child had worked on counting blocks for a consecutive number of trials, the investigators suddenly replaced the blocks with coins. As Figure 6 illustrates, each of these additional manipulations was also effective in producing or restoring high levels of correct responding (the authors are grateful to Julie Williams for collection of these data). These data lend further support to the notion that autistic children perform better under conditions that provide for variation, novelty, and change. It may also be suggested that a large number of other strategies for including antecedent variation might be similarly successful. For example, modulations of instructional intonation and occasional substitutions of teachers and settings may have similarly facilitative effects. These questions, of course, await further research. Nonetheless, the results of the present investigation suggest that autistic children are similar to us (and perhaps even stronger) in their preference (or need) for variation.

SUMMARY AND CONCLUSIONS

The above three studies are representative of the increased attempts to attain efficiency in the ways that instructions are presented to autistic children. While each study was concerned with manipulations of antecedent stimuli, they nevertheless addressed quite different parameters. The first study provided supplementary instructions in order to draw the children's attention to relevant cues. The second study investigated the role played by rate of instructional delivery (or the duration of intertrial intervals). The last study found that instructional (task) variation improved the correct responding and general affect of autistic children as they engaged in educational activities. Taken together, the studies are suggestive



Variation Via Changing Stimulus Materials

Variation Via Providing A Break

Figure 6. Influence of task variations on correct unprompted responses.

of the broad range of antecedent variables available for research and eventual productive application in the instruction of autistic children.

We have suggested that the research presented in this chapter offers techniques which can be easily utilized by teachers (and, of course, any person concerned with educating autistic students). We should point out, however, that the studies do not provide cookbook solutions nor do they provide highly specific instructional procedures. Rather, they should serve to illustrate variables that have proven to be functional in educational settings. That is, they offer "hypotheses" that teachers may use as guides when working with individual (or groups of) autistic children. Thus, teachers may benefit by varying their rates of instructional delivery until they identify a rate that proves optimal. (Our research suggests that such optimal rates may very likely be relatively fast for at least some tasks.) Similarly, if teachers encounter difficulty with particular tasks, they may find greater success by introducing additional variety into their teaching sessions. Further, such manipulations may improve the children's general responsivity and even their enjoyment as they participate in educational activities.

We have also indicated that additional research will be helpful in clarifying the important parameters of these variables as well as evaluating their applicability with other populations. We are also hopeful that these studies will serve as an impetus for additional research into instructional delivery in general. Clearly, a large number of antecedent variables remain uninvestigated. With further information, we can expect to see major improvements in our teaching techniques and, hence, our ability to educate autistic children.

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GENERALIZATION OF TREATMENT EFFECTS FOLLOWING EDUCATIONAL INTERVENTION WITH AUTISTIC CHILDREN AND YOUTH

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In the absence of generalization effects, treament interventions would be of limited value. Therefore, it is essential to identify strategies for promoting various types of generalization, including stimulus generalization, response generalization, and generalization over time (or maintenance). A number of strategies are discussed in this chapter that have implications for restructuring educational environments so as to facilitate generalization, and the problems of each type of generalization will be dealt with in turn.

STIMULUS GENERALIZATION

Stimulus generalization occurs when a behavior that is trained in one situation is subsequently performed in a situation not involved in the original training. Traditionally, it has been assumed that, once a child acquires a new behavior, it is somehow internalized and will therefore occur in many different situations. Research shows that this often is not the case (e.g., Handleman, 1979; Koegel and Rincover, 1977; Rincover and Koegel, 1975; Stokes, Baer, and Jackson, 1974; Wahler, 1969). If you teach a child to ask for some items in the classroom, he or she may fail to ask for the same items at home. Likewise, if a child is taught to say, "Hello," to the teacher, the same child may not say, "Hello," to his or her parents.

Often, the failure to generalize from one situation to another occurs because the controlling stimuli in the two situations are very different from one another and, therefore, the children can easily discriminate between the two situations. An interesting study by Rincover and Koegel (1975) illustrates this point. In teaching children simple receptive commands such as, "Touch your nose," one child would touch his nose on command in the classroom but not outside that setting. However, when the tables and chairs in the classroom were moved to a new setting, complete generalization occurred. This child's behavior had come under unusual stimulus control. He would respond to commands but only if tables and chairs were present. In working with autistic children, awareness of this type of idiosyncratic stimulus control is necessary, as it can clearly block generalization.

Programming Common Stimuli

An effective strategy for preventing the foregoing kinds of problems is to ensure that the various settings across which generalization is desired share common stimuli. One way to achieve this goal is to *program common stimuli* across settings (Stokes and Baer, 1977). Consider the problem of integration. The goal is to move a child from a special education setting into a regular classroom without seriously disrupting his or her education. If we examine the special education setting, we see that the child is often taught in a one-to-one situation with constant and close supervision from the teacher. In contrast, in the regular classroom, children are usually taught in a group and are expected to work independently for long periods. Clearly, these two situations do not share common stimulus characteristics. Therefore, stimulus generalizations should not be expected to occur from the special classroom to the regular classroom. In fact, this kind of generalization often does not occur. One solution is to make the two situations more similar. For example, the student-teacher ratio in the special class setting might gradually increase until is approximates the group teaching situation that characterizes the regular classroom (Koegel and Rincover, 1974). In addition, teachers could strengthen independent work skills by requiring that the child complete longer and longer sequences of tasks before receiving reinforcement (Rincover and Koegel, 1977). These training procedures result in the child's ability to function in a group teaching situation where the emphasis is on independent work skills. In short, if a goal is to prepare children for integration, then educators ought to determine the important stimulus characteristics of the regular classroom and gradually try to duplicate those characteristics within the special education setting.

Sequen[illegible]l Modification of Behavior

Sometimes it is difficult to identify the factors that prevent generalization. In such cases, the *sequential modification of behavior* (Stokes and Baer, 1977) can be applied. The basic procedure is to take the treatment intervention that worked in one situation and introduce it into every situation in which we wish generalization to occur. The rationale is that, if the intervention worked in one situation, it ought to work in others, as well. Nordquist and Wahler (1973) intended to engender generalization gains made in the clinic, in such areas as imitation and compliance, into the child's home. To achieve this transfer, they introduced the teaching procedures that had proven successful in the clinic into the home. Complete generalization across settings was obtained.

Sequential modification can also be useful in transferring control from one teacher to another. A child who is well behaved and making good progress with one teacher may show marked regression when placed with another teacher. There is a tendency for parents and even professionals to criticize the second teacher as incompetent when a closer analysis would show that the two teachers were employing different educational strategies. Often, the problem can be solved simply by training the second teacher to use the same interventions as the first. A favorable result of this strategy is that control exerted by the first teacher is often successfully transferred to the second teacher with minimal disruption of the child's educational progress (Russo and Koegel, 1977).

The sequential modification strategy has also been used to facilitate setting generality in the treatment of severe behavior problems characteristic of autism. Some autistic children exhibit life-threatening forms of self-injury such as head-banging or self-biting. The application of electric shock contingent upon such behavior has sometimes served to control this problem when other interventions have failed (Lovaas and Simmons, 1969). Unfortunately, stimulus generalization of such treatment effects has been the exception rather than the rule. Thus, suppressing self-injury in the home often does not lead to suppression on the playground. The solution to this problem may be to introduce shock treatment into the playground, as well. Sequential modification strategy is usually effective in producing the desired generalization (Corte, Wolf, and Locke, 1971; Lovaas and Simmons, 1969).

Training Sufficient Examplars

Although sequential modification has a high probability of success, it is time-consuming and can involve many personnel. A third strategy that is frequently useful is based on training sufficient examplars (Stokes and Baer, 1977). By training a behavior in the presence of a sufficient number of adults, or in a sufficient number of settings, or to a sufficient number of instructional stimuli, it is possible to produce generalization to untrained examplars (that is, to other adults, settings, or instructional stimuli not involved in the original training). Many studies demonstrate that, following training on relatively few examplars, a child will generalize to many other untrained examplars. For example, in a study designed to teach children a simple greeting, Stokes, Baer, and Jackson (1974) found that, after only two adults had trained a child to greet them appropriately, the child generalized this greeting to many other adults, none of whom had been involved in the original training. It is fortunate that nature is structured in this way, since, if it were not, we would have to train a child with every possible examplar of interest, a time-consuming and inefficient procedure.

Training sufficient examplars is particularly effective in promoting generalization in the area of language development. For example, in teaching a concept such as "yes" and "no," it is important for the child to respond appropriately to a wide variety of instructional stimuli other than those which have been trained. In the case of object identification (e.g., putting a shoe on the table and asking the child to respond to the question, "It this a shoe?" versus "Is this a shirt?"), the child is to give the appropriate answer not only to the specific stimulus that has been trained but to many others, as well. After training the child on six to ten objects, the child generalized the concept to new objects that had not been involved in the original training (Carr, 1980).

This strategy has also been useful in producing generalized suppression of entire classes of psychotic behavior such as echolalia (i.e., parroting the speech of others). Earlier research (Carr, Schreibman, and Lovaas, 1975) suggested that many autistic children answer questions in an echolalic manner if they have not yet learned a more appropriate response. Consider the child who has not yet been taught what a flower is.

When asked the question, "What is a rose?," the child will most likely reply, "What is a rose?". In contrast, normal children would respond to such questions by giving an answer such as, "I don't know," or its equivalent. Therefore, we trained autistic children to answer, "I don't know," selectively to questions to which they had no appropriate response (Schreibman and Carr, 1978). As Figure 1 shows, after training the children to respond in this manner to a relatively small number of questions (i.e., examplars), it was found that the children stopped giving echolalic answers to a wide variety of questions that had not been involved in the original training. They answered, "I don't know," to questions for which they had not yet learned any other answer, and continued to give specific, appropriate answers to the small group of questions (e.g., "What's your name?") that they already know how to answer. In short, by training each child to replace echolalic answers with a more appropriate response (i.e., "I don't know"), it was possible to produce generalized suppression of echolalia following training on a relatively small number of examplars (i.e., questions).

The success of training sufficient examplars is perhaps best documented in the study of Lovaas, Koegel, Simmons, and Long (1973). They reported widespread generalization of language and play skills in new settings and in the presence of new adults. It is likely that this favorable outcome resulted from their practice of using multiple trainers (parents as well as expert therapists) and training in multiple settings (in various parts of the home, clinic, and community).

The training of sufficient examplers has some interesting implications for redesigning school curricula. Currently, many schools operate on a model in which a variety of professionals attempt to teach a variety of separate skills. The classroom teacher, the art therapist, the music therapist, and the gym teacher all teach different skills. This mode is very likely to inhibit generalization. Consider, for example, a teacher who, through intensive drill, attempts to train the concept of "big" versus "little" using a small number of objects. It is likely that the child would display this concept only with respect to those objects that have been trained, only in the limited classroom situation, and only in the presence of that particular teacher. One solution to this problem would involve adopting the strategy of training sufficient examplars. The gym teacher could also become involved by asking the child to "throw the big ball" versus "throw the little ball," as could the art therapist

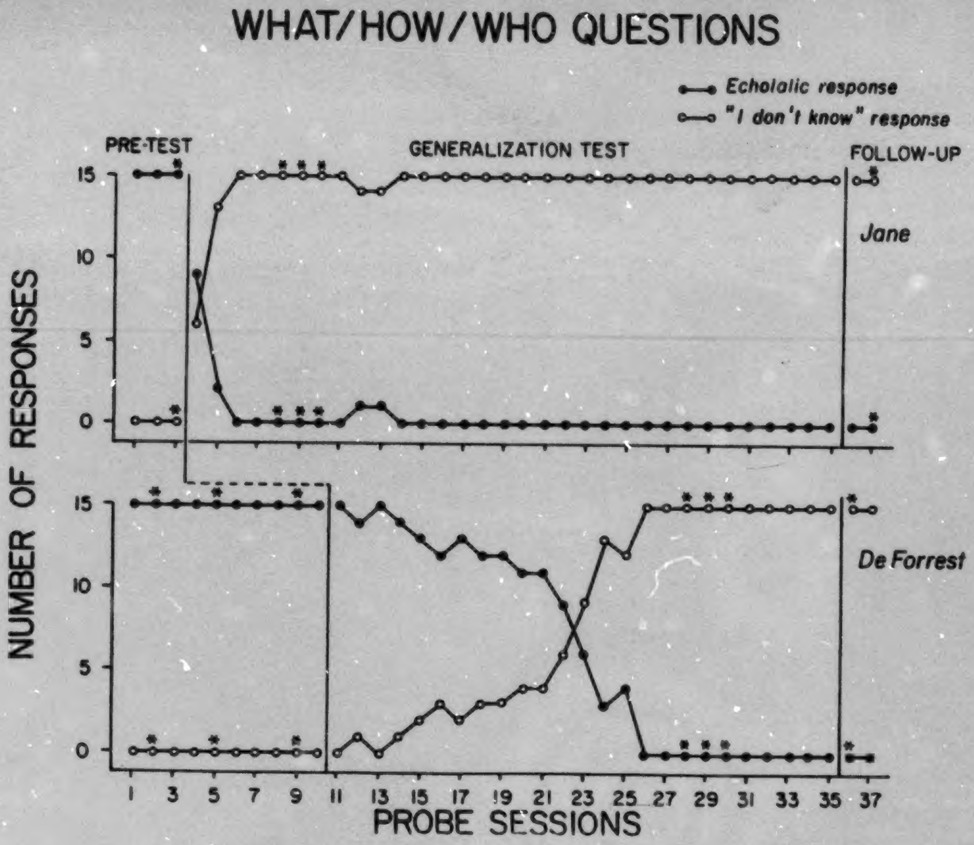

Figure 1. Results of training children in "I don't know "response."

(e.g., "Use the *big* crayon" versus "use the *little* crayon"), and the music therapist (e.g., "beat the *big* drum" versus "beat the *little* drum"). In this way, the curriculum would be restructured so that a given skill would be trained using multiple instructional stimuli, multiple trainers, and multiple settings. This should maximize in many other situations not involved in the original training. However, this tactic could only be implemented if those differences in educational goals and teaching methods that exist among various specialists gave way to a more integrative approach. Paradoxically, by trying to teach less, we might actually teach more.

RESPONSE GENERALIZATION

Response generalization represents a second type of generalization. For the present purpose, it can be said to have occurred when, following the systematic modification of one behavior, other behaviors that have not been targets of intervention also change. In a sense, then, response generalization concerns how much behavior change we get "for free" following our educational efforts. Given the large number of behavior deficits and excesses exhibited by autistic children, the identification and training of a few pivotal responses that would produce widespread behavior change would be a welcome innovation for treatment efficiency. Currently, we cannot determine on an *a priori* basis what kinds of responses we should teach in order to maximize response generalization. However, the results of recent research suggest, retrospectively, that there are at least five areas worth pursuing. These are: language development, observational learning, toy play, compliance training, and suppression of psychotic behavior.

Language Development

Lovaas et al. (1973) showed in a follow-up study that, after an intensive language training program, widespread gains occurred in other skills, including those reflected by IQ and Vineland test scores. Since these skills were not directly trained, they represent a form of response generalization. These gains may be better understood when one recognizes that language makes the child more accessible to many kinds of formal and incidental teaching efforts and is, therefore, likely to promote changes in diverse areas of development.

In work concerning sign language development (Carr, 1979), data consistently indicate decreases in self-stimulatory behavior after the children had been taught to use sign language spontaneously. Since instructors did not directly intervene on self-stimulation, the decrease observed in this behavior is an example of response generalization. It is likely that acquisition of sign language results in such widespread changes because it provides the child with useful access to adults and to the many reinforcers that adults control. When children gain access to important reinforcers through use of language, other behaviors such as self-stimulation may no longer serve as important sources of reinforcement and, thus, they may drop out of the child's repertoire.

Finally, language training may result in response generalization because it gives many children an alternative way of communicating frustration. Often, autistic children display severe forms of problem behavior in response to aversive situations. Thus, in the classroom, a child who is confronted with a difficult, frustrating task may respond by exhibiting self-injury, tantrums, or aggression. Such behavior may serve an escape function (Carr, 1977); that is, it may communicate the message, "This task is too difficult and therefore I don't want to do it." If the child learns to communicate this message verbally ("I can't do this"), we may provide an alternative means for influencing the teacher. It would no longer be necessary for the child to exhibit severe behavior problems in order to communicate frustration. Instead, a verbal comment to the teacher would set in motion certain changes such as simplifying the task, which would, in turn, help attenuate the level of frustration. One nonverbal child routinely aggressed against adults in order to avoid certain situations. For example, if he had finished his dinner and was ready to leave the dining hall, he would bite or scratch the nearest adult, at which point he was immediately dismissed from the dining area. It seemed likely that, if this child had had an alternative "escape" response, he might have exhibited that response rather than aggression in order to avoid what was, for him, an aversive situation. When the child learned a simple manual gesture to express the message, "Let me out," he relied upon that gesture rather than aggression as a means of escape (Carr, Newsom, and Binkoff, 1970). This, of course, is another example of response generalization, since aggression decreased even though no contingencies were directly applied to it. In short, many severe behavior problems displayed by autistic children may have a communicative function. Language may provide the child with an alternative means for expressing the communicative intent of such behaviors. Then, with these children, behavioral excesses may no longer serve any function and, thus, drop out of their repertoire -- a highly desirable instance of response generalization.

Observational Learning

A second area that has been the subject of little systematic research with autistic children concerns observational learning. Child development studies suggest that normal children acquire a great deal of their appropriate self-help, play, and academic behavior by watching other children engaging in such behaviors and then imitating these other children (Bandura and Walters, 1963). In addition, several early studies (Baer, Peterson, and Sherman, 1967; Lovaas, Freitag, Nelson and Whalen, 1967) indicate that training of simple forms of imitation in severely handicapped children can facilitate widespread behavior change. This skill, then, is a promising one from the standpoint of response generalization. Some recent research suggests that complex forms of observational learning can be taught to autistic children (Egel, Richman, and Koegel, Note 1); however, other research has demonstrated only limited gains in this area (Varni, Lovaas, Koegel, and Everett, 1979). A technology is needed for reliably producing complex types of observational learning that go beyond a simple imitation paradigm. Such a technology, once identified, should hold a prominent place in any special education curriculum for autistic children.

Toy Play

A third behavior effective in generating response generalization is toy play. In an intriguing series of studies, Rincover, Cook, Peoples, and Packard (1979) demonstrated that, by training children to play with carefully selected toys, they could virtually eliminate these children's self-stimulation in a free-play situation. They identified the sensory reinforcers that appeared to maintain a given child's self-stimulation and then taught each child how to play with toys that generated similar kinds of sensory reinforcement. For example, one child spent hours spinning plates, a self-stimulatory behavior that appeared to be maintained by the sounds the plate made as it spun around the floor. Having identified the effective reinforcer, these investigators taught the child how to play with a music box. A music box was selected because it too produced sounds and therefore might be capable of providing sensory reinforcers that would compete with those generated by the spinning plate. The child did in fact stop his self-stimulatory behavior. He now spent his time playing with and listening to the music box rather than occupying himself by spinning plates. Since self-stimulation per se was not directly treated, the decrease in this behavior is an example of response generalization. Teaching toy play appears to be especially useful as a way of constructively occupying the child during recreational periods. In any event, it is certainly preferable to the bizarre mannerisms that it replaces.

Compliance

Another pivotal response is compliance. Russo, Cataldo, and Cushing (in press) demonstrated that teaching highly disruptive children to comply with a variety of simple commands led to decreases in aggression, tantrums, and self-injury, though the latter were not direct targets of intervention. By presenting various commands, one is presenting stimuli that control behaviors and compete with problem behaviors. Theoretically, by strengthening stimulus control over appropriate behaviors, one should be able to control many behavior problems. Compliance is one such competing behavior.

Suppression of Psychotic Behavior

Finally, considerable response generalization may result from the suppression of psychotic behaviors. A number of studies (Koegel and Covert, 1972; Lovaas, Litrownik, and Mann, 1971) have demonstrated that one common form of psychotic behavior -- self-stimulation -- effectively blocks out external stimuli, making it difficult to teach a child anything. If self-stimulation makes the child impervious to the external environment, then its suppression should be accompanied by a wide variety of behavioral changes. It has, in fact, been demonstrated (Koegel and Covert, 1972) that suppression of self-stimulation is associated with vastly improved discrimination learning. Since discrimination learning is the basis for most educational programming for autistic children, permanent suppression of self-stimulation would be expected to eventually facilitate widespread response generalization. One implication of this research is that schools that fail to provide programs for suppressing self-stimulation are not acting in the best interests of the child. Not only will the child's rate of learning on specific tasks be impeded but the possibility of desirable response generalization effects will also be diminished

So far, this discussion has only dealt with suppression of self-stimulation. It is likely, however, that the presence of other behaviors such as tantrums and self-injury also greatly impede learning. Suppression of these behaviors would most likely result in improvement of behaviors that have not been direct targets of intervention. Some of our own data (Carr, Newson, and Binkoff, 1976) show that, when self-injury is suppressed, compliance to educational demands increases. In a sense, this finding is the opposite side of the coin from the Russo et al. (in press) study discussed above. They found that, by strengthening compliance, self-injury and other problem behaviors decreased; we found that, by suppressing self-injury, we were able to increase compliance. These inter-relationships are clinically interesting because they give a teacher, parent, or professional some idea of the multiple changes that may be expected following the modification of selected behaviors.

MAINTENANCE

The third aspect of generalization deals with maintenance, i.e., the persistence of treatment effects over time following the termination of treatment. Educational gains that are not durable are typically not meaningful.

Intermittent Reinforcement

The first strategy for inducing maintenance involves using intermittent reinforcement. Consider a simple task such as tracing a series of letters. Initially, the teacher must prompt the child to complete each letter and must reinforce each correct response. As a circumscribed training procedure, this technique makes sense, but, as a general classroom practice, it makes no sense at all. For example, it would be impossible for a teacher to reinforce every correct response for each child in a class of four to six children. Yet if a child has been trained on a continuous schedule of reinforcement, any sudden shift to intermittent reinforcement will almost certainly result in a deterioration of performance. To maintain behavior change, it is necessary to gradually wean the child from continuous to intermittent reinforcement during treatment (Koegel and Rincover, 1977). Group teaching of autistic children is possible only by gradually exposing the children to intermittent reinforcement programs (Koegel and Rincover, 1974); Rincover and Koegel, 1977). Thus, in the foregoing example the teacher might begin by reinforcing each correct letter-tracing response and then every second response, and so on, until, finally, the teacher would need only dispense reinforcement after the child had completed the entire worksheet. At that point, maintenance of the child's behavior would no longer depend upon continuous reinforcement and, thus, the child could work in a group situation characterized by intermittent reinforcement.

Teaching Functional Responses

A second strategy for producing maintenance involves teaching functional responses, i.e., responses that are likely to be reinforced in the natural environment. The most important use of this procedure is in the area of language development. For example, in our own research on sign language (Carr, 1980), children were taught to make signed requests that were likely to be reinforced outside of the training situation. The best signs proved to be those related to acquiring preferred foods and toys. In addition, other more general signs were also maintained (e.g., the sign for "help" as in, "Help me put on my coat," or the sign for "toilet"). Teaching children to label body parts or items of clothing is not a good way to begin language training, since these labels have little functional significance and are, therefore, unlikely to be maintained. In contrast, if we begin by teaching a child to ask for a sandwich or to be tickled, adults are likely to comply with these requests and such behavior could be maintained in the natural (i.e., home or community) environment.

Some behaviors are [illegible]tional because the opportunity to engage in these behaviors are intrinsically reinforcing. Once a child learns to blow bubbles, the very act of blowing bubbles serves as its own reinforcer. Such behavior is likely to be maintained long after original training (Rincover, et al. 1979). For example, vocational training practices might be slanted toward selecting tasks that have intrinsic reinforcement value. Many autistic children spend hours on such behaviors as sorting arbitrary objects into separate groups, suggesting that the opportunity to engage in these behaviors may be intrinsically reinforcing. Since many vocational tasks also involve sorting objects (e.g., nuts and bolts, multicolored pen sets), it may be possible to redirect compulsive behavior in a socially useful direction. This kind of vocational activity could be expected to maintain very well over time since the activity serves as its own reinforcer.

Reprogramming the Environment

The strategies discussed so far are often very useful but the most consistently useful strategy for producing maintenance has been that of reprogramming the environment. This means that treatment contingencies are never terminated; rather, they are kept in effect in all the important settings in which the child has contact. This clearly represents a reconceptualization of the term "maintenance" as it is normally used (i.e., the durability of gains following the termination of treatment). An analogy might help clarify the need for this reconceptualization. Consider a diabetic who is on insulin. If the insulin treatment is discontinued, the individual's condition rapidly deteriorates. Does this mean that insulin is a poor treatment because its effect is not maintained when treatment is terminated? Clearly, it does not. The argument is that autism is like diabetes in that autistic children require an ongoing treatment intervention if beneficial effects are to persist. A case in point is a situation that every teacher knows as the "vacation effect," in which a child returning to school after a vacation with untrained parents seems to have forgotten how to behave appropriately. The explanation for this phenomenon is simple: since the parents did not maintain any treatment intervention, the child's behavior deteriorated. Clearly, maintenance cannot be expected without a significant involvement on the part of parents. The term "classroom" must be redefined to include any setting in which an autistic child spends a significant portion of his or her time. The home environment certainly falls into this category. To continue the metaphor, if we are to prevent a "diabetic relapse" (so to speak), we must continue treatment by reprogramming the home environment so that parents are carrying out educational programs after school, on weekends, and during vacation periods. The necessity for this type of intervention was highlighted in a follow-up study by Lovaas et al. (1973). In that study, children whose parents had been trained to carry out educational interventions maintained treatment gains and continued to improve, whereas behavior deteriorated in children discharged to untrained caretakers.

If parents are unable to carry out educational programs at home, then it is likely that programs initiated at school will not have a lasting impact on the child's development. There are ways professionals can help parents successfully reprogram the home environment (Ambrose and Baker, 1979; Clark and Baker, 1979). These examiners found that only about a third of the families were willing to begin new teaching programs at home, whereas almost three-quarters maintained programs that were already in existence. If new teaching programs are difficult for parents to implement and maintain, perhaps parent aides should be provided just as we provide teachers with teacher aides in order to help with the greater demands of initiating and maintaining new teaching programs. Data also showed that between 30% to 50% of the families who were poor at maintaining treatment programs reported major disruptive events in their lives such as marital discord, divorce, and problems with other children. Clearly, not all families have these kinds of problems, but just as clearly, for some parents, the stress of living day after day with a severely handicapped child can take its toll. This would suggest that clinical services for parents could benefit some families. It is evident that maintenance does not refer to a few isolated behaviors taught at school but, rather, involves a consideration of the functioning of the entire family. Parents who request clinical services to help resolve serious family crises should be afforded those services. Such parents will be better able to implement educational programs at home and thereby promote the maintenance of educational gains.

CONCLUSION AND SUMMARY

From the standpoint of producing generalized treatment effects, a model educational program would have these components:

First, stimulus generalization would be promoted through the strategies of programming common stimuli, sequential modification, and training sufficient examplars, the last strategy being possible only through an integrative effort that cuts across educational specialties.

Second, response generalization could be facilitated by giving priority to teaching language and observational learning skills, toy play and compliance, and suppressing psychotic behaviors.

Finally, maintenance could be enhanced through the use of intermittent reinforcement and by teaching functional responses, i.e., responses which are likely to be reinforced in the natural environment. In addition, environmental reprogramming that involves extensive parent training, the use of parent aides, and the provision of clinical services for those parents who request them, would also be beneficial.

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REDUCING BEHAVIOR PROBLEMS IN THE CLASSROOM

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The behavioral excesses of children with autism have been noted since Kanner's (1943) initial identification of the syndrome. Violent temper tantrums, aggression, self-injury (e.g., head banging and self-biting), stereotypic body movements (e.g., spinning, highly repetitive, and ritualistic play, prolonged rocking, finger flicking, arm flapping), disconsolate weeping, messy eating habits, poor toileting habits, including feces smearing, and the monotonous utterances of inarticulate sounds or meaningless phrases are only a sample of the behavior problems described by virtually every writer in the field, irrespective of theoretical orientation (e.g. Bettelheim, 1967; Kanner, 1943; Ornitz, 1973; Rimland, 1964; Schopler, 1976; Wing, 1976). These problems persist into adolescence and adulthood (Eisenberg, 1956, 1957; Rutter, Greenfield, and Lockyer, 1967) and may represent risks both to life itself and to the opportunity to remain within the family unit (Schopler, 1976). These problems also limit access to educational opportunities, particularly in public school settings. Behavior problems and the great difficulty involved in controlling them most likely account for the fact that, until the passage of PL 94-142, children with autism have typically been excluded from the right to a public school education. Such unequal treatment has constituted a denial of civil rights to children with autism, but the particular irony of exclusion has been that access to structured educational programming has been known for some time to be among the most effective treatments of this devastating syndrome (Lovaas, Koegel, Simmons, and Stevens-Long, 1973; Rutter and Bartak, 1973).

Even when children with autism have access to educational opportunities, severe behavior problems have had a direct effect on learning, as Koegel and Covert (1972) have demonstrated with certain stereotypic behaviors. The conclusions are inescapable: if, as mandated by PL 94-142, children with autism are to be educated in public school settings, and are to derive the most from that opportunity, a technology for reducing these behavioral excesses is essential.

This paper discusses the extent to which this technology is presently available, its application in public school settings, problems that exist for school personnel who attempt to apply this technology, and a brief survey of those areas that remain to be addressed by researchers and practitioners in the field.

TECHNOLOGY

Present behavioral treatment of autism has its roots in studies carried out by Ferster and DeMeyer (Ferster, 1961; Ferster and DeMeyer, 1961; Ferster and DeMeyer, 1962). Their experiments provided the first empirical evidence of the functional, lawful relation between the behavior of children with autism and environmental events. Two inter-related lines of investigation resulted from these findings involving experimental and applied analyses of behavior: one addressed behavioral deficits and the other, behavioral excesses. A technology for replacing behavioral deficits with functional skills began with studies in the mid-1960's emphasizing language development (Hewett, 1965; Lovaas, Berberich, Perloff, and Schaeffer, 1966; Risley and Wolf, 1967). During this same period, a technology to eliminate characteristic excesses, such as tantrums and self-injurious behavior emerged (Lovaas, Freitag, Gold, and Kassorla, 1965; Wolf, Risley, and Mees, 1964).

Positive Programming

These earlier investigators were aware of the importance of designing positive programs to develop functional skills as a necessary context within which to focus direct efforts for reducing behavior problems. This context is important for both philosophical and procedural reasons. Our training as teachers, speech therapists, psychologists, and other school personnel prepares us to help people develop optimally and to acquire competencies allowing the greatest contribution to that development. If our goal were simply to eliminate behavior problems, a "flaming arrow through the heart" would suffice as a complete and effective technology. Our philosophical goal is not to create a non-behaving person but, rather, to develop behaviors that will contribute to the individual's ability to live an independent, productive and dignified life.

An environment that encourages development of functional skills is also procedurally important in our efforts to reduce undesired behavior. To the extent that a person with autism exhibits a rich repertoire of appropriate responses, incompatible with the undesired behavior, the latter behavior should occur infrequently, if at all (Hall, Lund, and Jackson, 1968). Most problem behavior occurs in an environment lacking opportunities for or instruction in appropriate responses. Further, if appropriate behaviors are effective in providing the individual with something he wants, they may reduce the functional necessity for maladaptive behaviors. Behavioral competency also reduces the frustration and failure that may result in undesired responses. In summary, positive programming is effective in establishing functional behavior, and often in itself reduces behavior problems. It may, therefore, make it unnecessary to focus specifically on reduction of behavior problems. At the very least, within a context of positive programming, it is procedurally more feasible to design an effective intervention for eliminating or reducing behavioral excesses.

Fortunately, replacing behavioral deficits with functional skills is increasingly possible. Although procedures for accomplishing this were originally developed in a clinic setting (Lovaas, 1977), Koegel and his colleagues have developed techniques appropriate for use in schools (Koegel and Rincover, 1974). It has also been demonstrated that classroom teachers can be trained to use these procedures (Koegel, Russo, and Rincover, 1977). Training teams have taught these techniques to teachers and other school personnel in many classrooms (Donnellan and Schuler, 1977), and a training model for widespread dissemination has been developed (Donnellan, LaVigna, Schuler, and Woodward, 1979).

With an effective instructional technology available and disseminable, it is possible for public schools to provide adequate positive programming. However, despite our gains, further research in this area is necessary. For example, language development procedures are often not effective in producing functional communication (Schuler, 1980). Also, problems persist in attempts to generalize educational gains to new environments and situations, and in maintaining these gains (Carr, 1980). Nevertheless, sufficient techniques are available for a well trained classroom team to provide the positive programming necessary to reduce behavior problems. Unfortunately, this training typically is not available to teachers across the country. State departments of education, with guidance and support from the U.S. Office of Special Education, must make available such training to personnel serving students with autism. Without such an effort, the reduction of behavior problems in the classroom cannot be seriously addressed.

Alternatives to the Use of Punishment

Before implementing an intrusive or restrictive punishment procedure, it is essential that less restrictive procedures have been properly implemented and have failed to meet the clients needs. People responsible for developing behavior management programs should be thoroughly familiar with such alternatives and the ethical issues involved. A recent review of the literature that identified at least ten alternatives to punishment (LaVigna and Donnellan, 1976) is available to personnel in applied settings.

Chart 1 outlines these alternative strategies. While they vary considerably in their originality, distinctiveness, and familiarity, taken together they represent a starting point for exploring non-aversive behavioral intervention. Such strategies as the differential reinforcement of competing behavior (Hall, Lund and Jackson, 1968) have been researched in laboratory and applied settings. Others remain experimental in their application, such as the use of stimulus control procedures to reduce stereotypic responding. Although Koegel and his colleagues (Koegel and Covert, 1972; Koegel, Firestone, Kramme, and Dunlap, 1974) have suggested the importance of decreasing or eliminating stereotypic behavior during learning tasks, the need to eliminate all stereotypic behavior has not been demonstrated as essential for acquisition of new skills. Limiting stereotypic behavior during instructional sessions does appear to be important and may be accomplished in a number of non-punitive ways. For example, for some children, positively reinforcing stereotypic behavior during certain designated time periods may decrease stereotypic behavior during the contrasting structured learning periods.

Chart 1

A Partial List of Alternatives To The Use of Punishment And Their Definitions

1. Differential Reinforcement of Competing Behavior
   The reinforcement of those behaviors which are incompatible with the undesired response in intensity, duration or topography.

2. Differential Reinforcement of Low Rates of Responding (DRL)
   The reinforcement of the undesired response only if at least a specified period of time has elapsed since the last response, or only if fewer than a specified number of the undesired responses occurred during a preceding interval of time.

3. Differential Reinforcement of Other Behavior (DRO)
   Reinforcement after a specified period of no undesired responding.

4. Stimulus Control
   Establishing the discriminative control of an undesired behavior, either through differential reinforcement or fading.

5. Stimulus Change
   The noncontingent and sudden addition of a novel stimulus or an alteration of the incidental stimulus conditions.

6. Instructional Control
   The differential reinforcement of those responses which are in compliance with the verbal instruction presented.

7. Shaping
   The gradual modification of some property of responses (usually, but not necessarily, topography) by the differential reinforcement of successive approximations to some criterion.

8. Stimulus Satiation
   The continued noncontingent presentation or availability of a reinforcer that reduces the reinforcer's effectiveness.

9. Additive Procedures
   The combination of two or more procedures in order to reduce or eliminate an undesired behavior.

10. Programming
    An instructional sequence designed to help the subject reach certain behavior objectives based on a behavior analysis and involving the systematic manipulation of stimulus conditions, consequences, instructional stimuli, and other variables that have a functional relationship with the behavior.

O'Neil (1978) studied a stimulus control procedure to reduce stereotypic behavior by bringing the behavior under the control of a stimulus not normally present in the environment. A young boy was positively reinforced for engaging in stereotypic behavior when a laboratory room was illuminated by a red light, i.e., the red light served as a cue or discriminative stimulus, indicating that stereotypic responses would be rewarded. When the room was under normal lighting conditions, the subject was involved in a learning task and stereotypic responses were never rewarded. Positive reinforcement of stereotypic behavior maintained such disturbed behavior in the former condition, but stereotypic behavior under the latter condition was significantly reduced compared with baseline. This effect may have been the result of stimulus control established under differential reinforcement. That is, by reinforcing stereotypic responses during specified periods and under certain stimulus conditions, these conditions (e.g., red light) appeared to serve as cues for the subject to respond in a stereotypic manner, thereby decreasing this behavior during other periods when the reinforcement and cues for such responses were not available.

Stimulus control procedures to reduce stereotypic and other undesired behavior is still in an experimental state. Replications across subjects and responses are needed to identify the conditions under which stimulus control procedures provide a viable alternative to punishment. A related series of studies based on the concept of sensory reinforcement, which is speculated by some researchers to maintain stereotypic responses, has been launched by Rincover and his colleagues (Rincover Cook, Peoples, and Packard, 1979). In this approach, once the salient reinforcer is identified, its availability is eliminated from those items used in stereotypic responding and made available through materials that require a more appropriate set of responses. This approach to reducing stereotypic behaviors seems to be a promising alternative to punishment.

Although extensive additional research is necessary to develop a well verified non-aversive technology for controlling behavior problems, it appears that the available non-aversive technology has been under-utilized. This must change if we are to minimize the use of punishment, which is considered by some to be characteristic of the field. In one pilot study (LaVigna, Peterson, Peipgras, and Rich, 1977) non-aversive procedures were used exclusively to modify the classroom behavior problems of five adolescent students with autism or a similar severely handicapping condition. These behavior problems included: rocking, inappropriate questions, shoe-gazing, thumbsucking, inappropriate conversation, inappropriate touching and nonsense talk. The non-aversive procedures were applied in a series of AB and changing criterion designs. They included: differential reinforcement of competing behavior, differential reinforcement of low rates or responding, differential reinforcement under discriminative stimulus control, and information feedback. Once a target behavior was under control, the reinforcement schedule was gradually thinned until the procedure could be discontinued without causing a reversal of treatment gains. The target behaviors were either eliminated or reduced to an acceptable level. When intervention procedures were phased out, the target behaviors did not return, nor did there appear to be a substitution of other problem behaviors. An acceptable level of classroom control was established and maintained without resorting to punishment techniques.

The results of these and other studies (LaVigna, 1978) which attempt to control, without punishment, the behavioral excesses associated with autism are only suggestive of a punishment-free technology for classrooms and other applied programs. Research to extend and expand this technology will make a wider repertoire available to classroom personnel who, because of personal values or administrative restrictions, cannot use punishment procedures. The research emphasis should be on attempting to identify conditions under which non-aversive procedures can be effective, rather than on a treatment outcome strategy that attempts to test procedural effectiveness under a fixed or limited set of conditions (Azrin, 1977). Early work, referred to above, provides a stepping stone and point of departure for the systematic expansion of a non-aversive technology. Controlled experimental testing and evaluation of these procedures under a variety of conditions is a natural and reasonable next step to making them more widely known, effective, and available in classroom settings.

Given our present technology, we must be prepared to resort, occasionally, to an intrusive punishment procedure when a very serious behavior problem has been unresponsive to less intrusive treatments. Failure to resolve such a severe problem may interfere with continued development and with the dignified life of the student. Alternatives to punishment may not be effective nor appropriate for several reasons: (a) the inability to identify or create an effective positive reinforcer for use with a DRO/DRL schedule or for use with any of the other alternative procedures; (b) the inability to identify or control the maintaining variables or to offset them with competing contingencies of reinforcement; and (c) urgency factors that may preclude the sometimes slower process of establishing control by use of positive procedures. If, after a positive program has been established and less intrusive and restrictive alternatives have been attempted or considered, the problem behavior remains and is seriously interfering with his educational progress and/or quality of his life, the student's rights to a public school education may require the use of punishment.

The extensive literature on punishment documents its effectiveness across a wide range of subjects and responses. Comprehensive reviews of this literature are available elsewhere

(Gardner, 1969; Lichstein and Schreibman, 1976; Lovibond, 1970; Smolev, 1971; Solomon, 1964; Tanner, 1973). Punishment to reduce the frequency or intensity of an undesired response falls into two categories. The first involves the delivery of an aversive stimulus contingent on the occurrence of the targeted response. The aversive stimuli could include water squirts, slaps, noxious smells and tastes, and so on, up to and including an electric shock delivered by a hand-held inductorium (e.g., Foxx and Azrin, 1973; Merbaum, 1973; Sajwaj, 1974; Tanner, 1975). It was with the use of contingent electrical stimulation that Lovaas (Lovaas and Simmons, 1969) first demonstrated that the most bizarre and extreme forms of self-injurious behavior could be rapidly eliminated. A recent review of the literature (Lichstein and Schreibman, 1976) suggests that, in some cases, the side effects of contingent electrical stimulation may be more positive than negative. It is also important to consider that, although shock is effective in producing immediate and complete suppression for self-injurious behavior, it has among the least lasting effects of all techniques for reducing maladaptive behaviors (Frankel and Simmons, 1976). More research is required to clarify this issue.

Contingent painful electrical skin shock is an intervention that should be reserved only for the most serious situations, and in fact is rarely used in applied programs. Overcorrection, however, is a punishment procedure that is viewed to be less intrusive/aversive and is used in a variety of settings for a wide range of subjects exhibiting a wide array of maladaptive behaviors (e.g., Azrin and Foxx, 1971; Azrin, Kaplan, and Foxx, 1973; Foxx and Azrin, 1972; Foxx and Azrin, 1973; Freeman, Grahm, and Ritvo, 1975). The procedure itself has many components and it is not clear which of these contributes to its effectiveness (Epstein, Dolge, Sajwaj, Sorrell, and Rimmer, 1974). Moreover, many of the same issues that have arisen with shock punishment are of concern with overcorrection, as well (e.g., resiliency and generalization of treatment effects).

The second category of punishment involves the withdrawal of a reinforcing stimulus or event contingent upon the occurrence of the targeted response. Two fairly common procedures fall within this category. One is time out from positive reinforcement, and the other is a response cost procedure. Time out from reinforcement typically involves removing the person from a reinforcing environment and placing him/her in another area that is isolated from as many potentially reinforcing stimuli as possible (Leitenberg, 1965). This procedure has many variations and has been used successfully to reduce a variety of behavior problems (Birnbauer, Bijou, Wolf, and Kidder, 1965; Birnbauer, Wolf, Kidder, and Tague, 1965; Lovaas, Freitag, Nelson, and Whalen, 1967; Risley and Wolf, 1967; Wolf, Risley, and Mees, 1964). Time out procedures need not involve placement of a child in an isolated room, and some forms of time out are no more intrusive than DRL, DRO, or stimulus control procedures (Bersness, Thompson, and Warrington, 1977). Response cost is less widely used with autistic children and youth. It is most typically applied within the context of a token economy and involves a "fine" of a fixed number of tokens contingent on occurrence of the target behavior (Ayllon and Azrin, 1968; Kazdin, 1974; Weiner, 1974).

CLASSROOM APPLICATION

Positive programming, alternatives to punishment, and punishment -- together -- represent a considerable technology available for classroom application. If classroom teachers are to include punishment in the delivery of a complete technology for reducing the frequency and/or intensity of behavioral problems, it is important that they consider whether their classrooms meet the following minimum requirements. In assuring that these pre-conditions are satisfied, teachers protect both the rights of their students and themselves, should questions be raised concerning use of specific techniques.

Some Pre-Conditions to the use of Punishment in the Classroom

1. Constructive positive programming: For the philosophical and procedural considerations discussed here, punishment procedures should not be used unless the adequate positive programs for that particular student have been spelled out in the IEP and properly implemented by the interdisciplinary team.

2. Behavioral assessment and analysis: Before designing any direct intervention, a functional analysis of the behavior should be carried out in an attempt to determine the controlling variables. For example, self-injurious head banging might be a function of an organic problem or be environmentally controlled by social reinforcement or task avoidance, or intrinsically controlled as a function of the sensory stimulation, (Carr, 1977). The information provided

by this kind of analysis contributes to the design of an effective intervention. Thus, it is important not to proceed from the identification of a behavior problem directly to an intervention but, rather, to follow identification with an analysis that contributes to the design of an effective intervention.

Identification ---------- Analysis ----------Design

This recommendation applies not only to punishment but also to its alternatives.

3. Alternatives to punishment: Alternatives should be employed before punishment is implemented. All too often, this pre-condition is given lip service only or met in an unsophisticated, perfunctory way. One solution is an explicit consideration of all intervention alternatives Written documentation of these preliminary deliberations must be included in the interdisciplinary reports, including reasons for rejecting positive alternatives. Any procedures that are used should be documented and should clearly be a result of an interdisciplinary decision.

4. Qualified personnel: Children with autism have brought unprecedented challenges to psychologists, psychiatrists, teachers, and others. Designing effective interventions for such serious behavior problems requires creativity developed through extensive training and relevant experience. The educational system expects too much when teachers are required to fill this role alone. The burden of being a "behavior specialist" is one that should not be born by a teacher alone, even if that person has had excellent pedagogical training, has attended workshops on the topic of behavior modification, and has read books and articles that deal with the subject. Teachers make their own contribution to the interdisciplinary team but should request access to a behavior specialist who will assume much of the responsibility for helping develop behavior management programs in the classroom. It is unrealistic to expect every school district to have a behavior specialist on staff qualified to deal with every possible behavior problem. However, the person assuming this responsibility should have two important qualities: (a) the willingness to acknowledge non-defensively that outside expert consultation is required to design an intervention for a specific behavior problem; and (b) a knowledge of where to get out-

side expert consultation when it is needed. Teachers should not be placed in a position of using an experimental or unishment procedure in the classroom unless qualified personnel are available, either on staff or through a consultation arrangement, to supervise the intervention.

5. Consent: Prior, written, informed consent should be obtained from parents before using punishment. This is consistent with the rights of the student and protects the teacher and school administration. The mechanics of obtaining informed consent that meets legal requirements can be complex, involving at least 32 separate considerations (Martin, 1976). For this reason, it is recommended that districts use legal counsel in developing the procedures and forms to be used.

6. Guidelines: The need for written guidelines for use of punishment and other behavior management procedures is a hotly debated issue in the field and one for which there is no clear consensus (e.g., Bazar, 1979). From the teacher's point of view, however, written guidelines would be helpful in assuring that procedures are properly controlled and carried out within the appropriate context. Without them, classrooms would be operating in the dark without having a clear idea of what administration views as appropriate. Accordingly, teachers should ask for and require written guidelines before allowing punishment procedures to be used in their classrooms.

7. Peer review: Regardless of the quality of expertise available to classrooms, a program's use of behavior management procedures, including punishment, should be subject to a peer review process. An independent review panel of experts in the field of behavior management should be established through either a reciprocal arrangement with another district, recruitment from the university system, or arrangements with the state department of education, mental health or developmental disabilities. This panel should periodically review the program's use of behavior management procedures to assure that it meets appropriate professional standards.

To summarize, due to state and federal mandates requiring education of all children regardless of the handicapping conditions, public school classrooms are facing the challenge of serving children with problems typically associated with autism, including behavioral excesses that are often extreme and very difficult to manage. To deal effectively with these problems, a rich context of positive programming, non-aversive behavior management techniques and, when appropriate and necessary, punishment must be available. Both student and teacher rights can best be protected if certain pre-conditions are met before punishment is used in a classroom setting. These include: (a) a context of constructive, positive programming; (b) a behavior analysis that attempts to identify the relevant variables maintaining the behavior targeted for reduction; (c) written documentation of the alternatives to punishment that were fully and properly implemented; (d) the availability of personnel qualified to be experts in designing behavior management programs; (e) informed, written prior consent from the student's parents; (f) written guidelines for the use of punishment and other behavior management techniques in the classroom; and (g) an independent peer review committee to review the classroom use of punishment and other behavior management programs.

Problems

It would be misleading to suggest that major problems associated with the reduction of behavior problems do not exist for the classroom. Not the least of these problems is the difficulty in satisfying the pre-conditions mentioned above. In sparsely populated areas it may be difficult, if not impossible, to have qualified personnel on staff or even available on a consulting basis. There are, however, some solutions to these problems. When a district cannot obtain these resources, the state department of education must provide them, in order to meet their obligation under PL 94-142 to provide an appropriate educational program for every school-aged child. On a statewide basis, it is likely that the required expertise will be available and, if not, resources outside the state can be identified. The National Society for Autistic Children is able to recommend experts in the field of behavior management in closest geographic proximity to the state or district in question. It should be noted that the use of punishment may not be appropriate in a public school setting when expert consultation is not available on an on-going basis.

Another problem in meeting the foregoing pre-conditions is the lack of written guidelines. Having participated in the development of such guidelines in California, this writer can attest to the difficulty involved in developing guidelines which pass the scrutiny of all the interested parties. After five years, the guidelines in California are still in draft form. The U.S. Office of Special Education could provide a major service to the field if it would convene a group of prominent behavioral psychologists, educators, and consumer representatives charged with the task of developing a model set of guidelines which could be adopted by state boards of education and local education authorities. Most likely the National Society for Autistic Children and other advocacy groups would support and cooperate with such an effort, as such groups have long expressed the need for guidelines in this area.

A further difficulty for the classroom lies in the application of many of the available punishment procedures with adolescents. Many of these procedures simply become impossible to carry out when the student reaches adolescence and approaches adult size and weight. For example, some suggest that certain procedures would not be effective or appropriate for any individual who would require restraint by more than two male staff members (Foxx, Foxx, Jones, and Kiely, 1980). Accordingly, our usable technology sharply decreases as the student with autism becomes older. This, of course, argues strongly for continued research in the development of non-aversive techniques that are appropriate and usable regardless of the size and age of the student.

Regardless of its efficacy in many cases, administrative and legal regulations are increasingly being passed which prevent the use of punishment procedures under any circumstances. This means that regardless of its significance to our present technology, and our ability to meet any set of pre-conditions assuring its proper use, we may be prevented from using punishment. Since one might argue that making punishment unavailable as an intervention may be inconsistent with a student's right to an appropriate education in the least restrictive setting, we may expect challenges to this viewpoint. Nevertheless, it may be the legal and administrative reality we all face unless and until those arguments are resolved. Developing a non-aversive technology for the control of behavior problems has the highest research priority if our goal is to serve autistic students in the public schools.

CONCLUSIONS

The foregoing considerations lead compellingly to several recommendations to the U.S. Office of Special Education.

The first of these recommendations is to substantially support research aimed at furthering development of a non-intrusive, non-restrictive technology for reducing severe behavior problems. This research should be oriented toward identifying conditions under which non-aversive procedures are effective in educational settings. We also encourage other areas of research, such as seeking a more complete understanding of the variables affecting the behavior problems of autism, and expanding our ability to identify or create effective extrinsic positive reinforcers.

The second recommendation is to gather nationally prominent professionals and consumer representatives to develop a model set of guidelines for the use of intrusive behavior management techniques in the classroom. These guidelines should be both general enough for adaptation by state and local education districts, and specific enough to provide teachers with a clear set of standards for classroom use. Although such guidelines should not be prescriptive, which would remove clinical decisions from the local level, they should provide guidance to administrators.

Finally, the U.S. Office of Special Education should begin to disseminate our most well established positive technologies. As further research clarifies other positive approaches (see the first recommendation), the educational community should be apprised of these technologies and the conditions under which they are effective. The importance of controlling behavior problems with non-aversive techniques, of establishing constructive, positive programs, and the need for developing administrative guidelines for intrusive behavior management programs in the classroom should be communicated to teachers and educational administrators.

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TEACHING FUNCTIONAL LANGUAGE

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Impressive gains have been made in language teaching in recent years. The development of methods for teaching speech imitation, sentence construction, and grammer have shown particular benefits from increased expertise. Despite the general advances in both knowledge and teaching technology, many individuals diagnosed as autistic fail to develop functional language and often remain mute and echolalic. Despite the fact that efforts to educate autistic individuals have become more and more concerned with language development, the results so far have been disappointing. The proliferation of operant conditioning techniques used to establish speech and language behaviors has failed to yield effective and reliable methods of training generalized or spontaneous language in autistic individuals. Two questions are inspired by the relative failure in language teaching for autistic individuals. First, one might question whether language training deserves the prime attention that it usually receives. Second, one may question to what extent current language training practices should be modified so that their effectiveness is optimized.

While language skills are generally viewed as a positive prognostic factor, this does not mean that overall educational progress requires language gains. On the contrary, many independent living skills can be taught in a non-verbal manner. Proficiency in self-help and vocational skills which maximize an individual's chances to maintain himself in less restrictive environments can be taught effectively in a non-verbal manner. Rather than continuously emphasizing weaknesses, i.e., language and social skills, an alternative strategy might be to exploit the type of skills (e.g., visuo-spatial discrimination and motor manipulation) that many autistic individuals exhibit to such a remarkable extent.

Educational responsibilities extend far beyond language teaching. Common practices that almost exclusively emphasize language also deserve critical reconsideration on other grounds. In efforts to normalize, we tend to teach others to produce speech in the same context as we do, adhering to the same rules of social interaction and exchange. However, the perspectives of the autistic individual, including his limited social interest, may not be congruent with such an orientation. One might argue that a different style of thinking is not compatible with conventional use of language. After all, much of our own use of language is irrelevant to immediate survival needs, but is intended, rather, to maintain social rapport and to structure reciprocal action. This use of language may be largely irrelevant to the autistic individual (hence, generalization of social phrases that we like others to produce fails to occur). Nevertheless, if such use of language is pursued, it should be based on an interest in activities that take place in the context of social interaction. Activities that require the close cooperation of two or more individuals may serve to raise an autistic individual's awareness of the other as a discourse partner.

As far as current language teaching practices are concerned, several factors may account for their limited effectiveness. These factors are of a theoretical as well as an applied nature. On one hand, they are a reflection of our limited understanding of autism and of the orientation of psycholinguistic research, and, on the other, they reflect our limited understanding of learning processes and of language learning in particular. Poor teaching practices may be partially responsible for the poor outcome of language teaching efforts. After all, functional language use includes a range of behaviors of tremendous complexity. Hence, the analysis of the steps involved in teaching the desired skill is far more complex than that of, for example, making a bed. While theoretical and applied factors are not separated that easily, this chapter will attempt to address them separately. A discussion of theoretical factors, i.e., approaches to language deficiencies manifested by individuals with autism, will precede a critical look at current teaching practices. The review of approaches will hopefully serve to illustrate that: (a) current teaching practices stem from prevailing, (i.e., structuralist) orientations of psycholinguistic research of the past, and (b) recent changes in the scope of this type of research hold promise for further insights into the nature of the autistic syndrome and, therefore, for more effective teaching practices.

APPROACHES TO LANGUAGE DEFICIENCIES IN AUTISM

While autism was initially viewed as an emotional disturbance, it has increasingly come to be characterized as serious language impairment coupled with perceptual idiosyncracies. Consistent with this shift, the focus of treatment changed, with language becoming a prime focus. Nevertheless, the effectiveness of language teaching efforts may have been limited by a failure to place them within a broader context of communication. This is in part attributable to the early focus of psycholinguistic research on sentence structure rather than the communicative use of speech. Zealous efforts to increase speech output (i.e., teach verbal imitation skills, produce increasingly complex sentences, and so on) may have suffered from an underestimation of the severity of language deficiencies associated with autism. It has become increasingly clear not only that verbal production and comprehension are impaired, but that the non-verbal roots of communication are also involved (Ricks and Wing, 1976; Fay and Schuler, 1980). Autistic individuals who lack functional language will usually not compensate for that deficiency through the extensive use of gesture, facial expression, posture, gaze direction, or other non-verbal means. This pervasive breakdown in the regulation of social interaction is especially apparent when the ability to talk surpasses communicative competence. After having mastered some of the grammatical aspects of speech production, many autistic individuals remain clumsy when it comes to contextual use, as if the give and take of discourse is not understood. Utterances are commonly produced without ensuring the attention of the discourse partner. Similarly, word choice, tone of voice, speaking volume, intonation, and so on are not adjusted on the basis of listener's feedback. Listener's reactions, such as amazement, apparent boredom, or confusion, do not serve to shift or elaborate a chosen discourse topic. Apparently, the autistic speaker does not readily take the perspective of the listener. In many cases, vocalizations are not communicative; they remain largely limited to self-stimulatory functions. Consequently, efforts to enhance speech production will fail to generate functional language if attempts are not made to ensure that utterances taught are relevant to communicative needs. In many cases, the latter are limited or may still need to be established.

Past efforts to teach language have generally failed to examine the functions of utterances taught. In all likelihood, this has, until recently, reflected the orientation of psycholinguistic research. Syntactic abilities and generative use of grammatical rules were the prime focus of research. This structural rather than functional orientation has dominated intervention practices, and has resulted in programs to teach structures such as "is 'verb' ing" without much consideration for referent and context. Fortunately, the shift in the orientation of psycholinguistic research is reflected by a great number of studies that examine the functions of verbal as well as non-verbal behavior. In addition, the cognitive correlates of language development have become the focus of systematic investigations. This shift will hopefully elucidate language deficiencies in autism that appear closely tied to communicative and cognitive failures.

Some recent studies are promising in this respect. For instance, functional analyses of immediate echolalia were carried out by Prizant (1978). On the basis of videotaped samples of echolalic behavior, he was able to identify seven different types of echoing behavior. These different functions were inferred through a joint analysis of the verbal and non-verbal components of echoing behavior. For instance, one type of echoing behavior was described as non-focused because the echo was rigid and immediate and not accompanied by any changes in non-verbal behavior. All the other types were accompanied by certain changes in non-verbal or subsequent verbal behavior, i.e., "rehearsal" by the subsequent appropriate response, "turn taking" by an accompanying non-verbal social exchange, "self-regulatory" by concomitant motor behavior and corresponding changes in behavior, "declarative" by some demonstrative gesture, and "confirmation" and "request" by the anticipation of some adult response. Furthermore, an important consideration in making these distinctions was the direction of gaze as an indication of whether the echo was directed to another person. This type of analysis is helpful in determining whether echoing behavior is desirable, deserves encouragment, should be discouraged or modified into behavior of a more functional nature. Furthermore, developmental progression can be analyzed and documented. More conventional structural analyses do not allow for such differentiations, which may be illustrated by the continuous controversies regarding the role of echoing behavior (for a more detailed discussion, see Schuler, 1979b).

The study of language behavior in the context of non-verbal behavior, and in relation to cognitive development has further helped to elucidate the severity of language deficiencies in autism. Curcio (1978) investigated sensorimotor abilities in 12 mute autistic boys and related them to their performance on a standard task designed to examine non-verbal communicative strategies in a problem-solving task that required adult assistance. Curcio found that none of the children would show or point to objects; that is, so called "protodeclaratives" were not used. Furthermore, those children who exhibited minimal non-verbal communication skills were also limited in their sensorimotor development, as evidenced by poor performance on imitation, means-end, and causality scales. Interestingly, performance on the object permanence scale was generally higher suggesting that there is no clear-cut correlation between the development of object knowledge and functional communication skills.

The results of our own non-verbal investigations of conceptual abilities (Schuler and Bormann, 1980), as they relate to communicative development in the autistic adolescent, are remarkably consistent with Curcio's findings. They also indicate that object skills can develop somewhat independently from communication skills. These non-verbal investigations of conceptual abilities were designed to examine cognitive abilities of autistic individuals through non-verbal means, using a discrimination learning and generalization testing paradigm. Thirty-six autistic adolescents were subjected to a series of experiments designed to explore conceptual skills. Subjects were divided according to communicative behavior without regard for vocal production. The first group was composed of individuals who did not exhibit any verbal or non-verbal forms of intentional communication. Vocalizations, if any, were self-stimulatory rather than communicative in nature. The second group exhibited some verbal or non-verbal forms of communication limited to single words or phrases, or the equivalents thereof without any sign of grammatical skills (the delayed echolalic use of single words or phrases is included within this category). The third group exhibited communicative behavior marked by at least rudimentary grammatical abilities, i.e., the ability to construct the equivalents of two-word utterances.

The non-verbal investigations carried out were designed to bypass the need for any verbal explanation or imitation. Real life objects were used rather than two-dimensional representations. The first series of studies examined the ability to match objects on the basis of perceptual vs. conceptual properties, as measured by six sub-tests. The first subtest required identical objects to be matched; for instance, a black plastic comb was to be placed with another black plastic comb. The second subtest required that similar, but non-identical objects be matched. For instance, that same black plastic comb was now to be matched with a larger blue one of a slightly different shape. The third subtest required broken objects to be matched with their whole counterparts, e.g., a broken styrofoam cup with the corresponding complete cup, (see Figure 1). The fourth subtest required the matching of complementary parts of objects, i.e., the bottom and top of a jar, as illustrated in Figure 2. The fifth subtest required that objects used as a tool be matched with objects representing the corresponding action, e.g., a pen and a piece of paper with scribbling on it, as illustrated in Figure 3. The last subtest required the matching of functionally equivalent objects, e.g., a brush with a comb. For a further illustration of this subtest, see Figure 4. All the different matching tasks were presented in the same manner. One sample object was presented on a display pedestal, and the matching object was to be selected from an array of six choice items. Since verbal instructions were not provided, all test items were preceded by two practice items. Subjects were trained to consistently perform correctly on these practice items through the use of differential reinforcement and prompting. When a criterion of five consecutive correct responses or 90 percent correct was satisfied, the six test items were presented following a generalization testing paradigm.

The second series of experiments pertained to the ability to make abstractions about geometric properties through series of two-way discriminations regarding pairs of geometrical configurations that differ with respect to only one stimulus dimension (see Figure 5). At all times, subjects were presented with one pair of stimulus cards and prompted non-verbally to place one of these two cards on the display pedestal. Once consistent, unprompted correct responses were obtained, subsequent pairs of stimulus cards were presented representing the same distinction. Comprehension of the underlying rule was inferred at the point that nine out of ten correct choices were made when

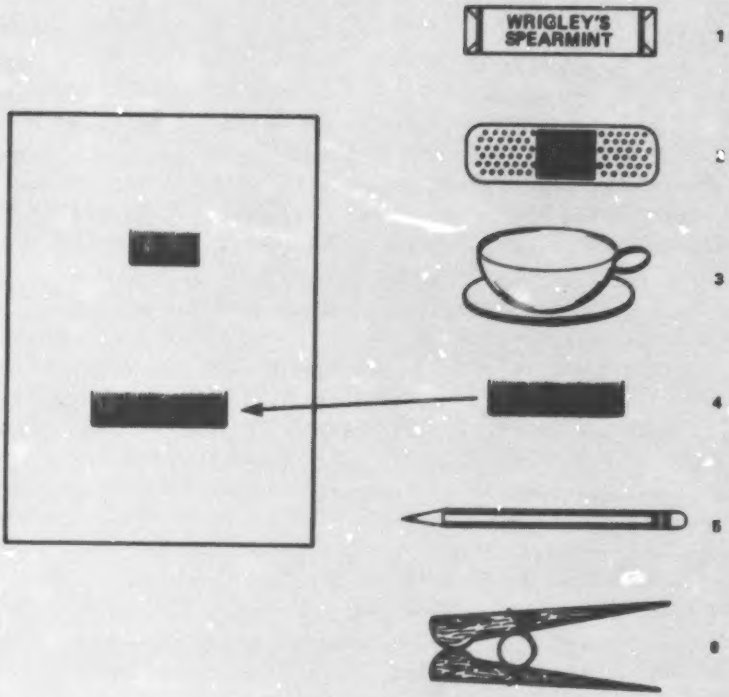

WRIGLEY'S SPEARMINT
1
2
3
4
5
6

FIGURE 1. Display of choice objects: 1. gum; 2. bandaid; 3. cup; 4. comb; 5. pencil; 6. clothespin

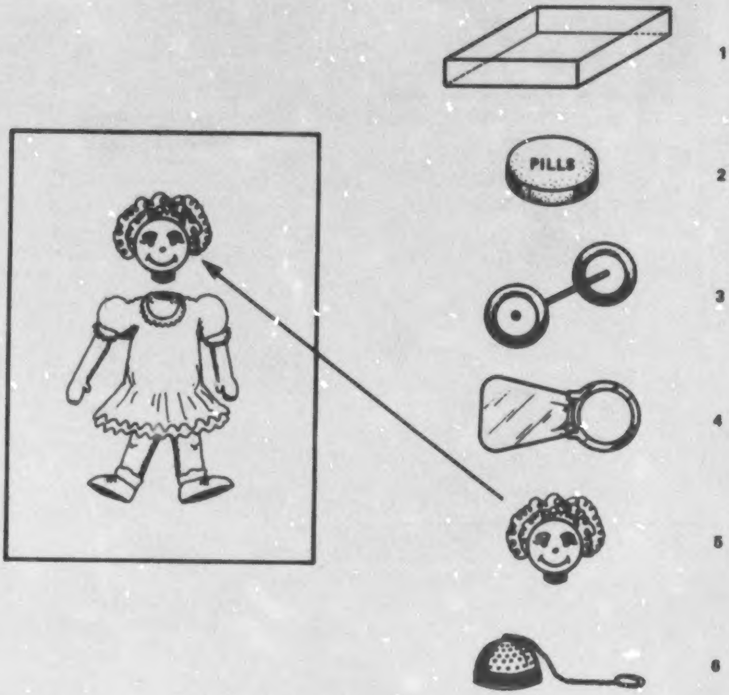

1
PILLS
2
3
4
5
6

FIGURE 2. Display of choice objects used to match complement parts.

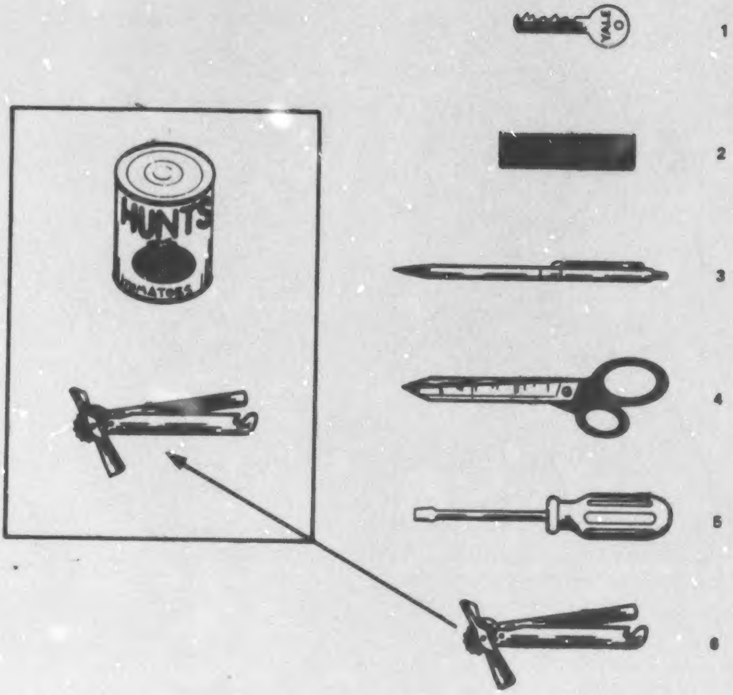

HUNTS
TOMATOES
YALE
1
2
3
4
5
6

FIGURE 3. Display of objects used to match tools and objects that represent the corresponding actions.

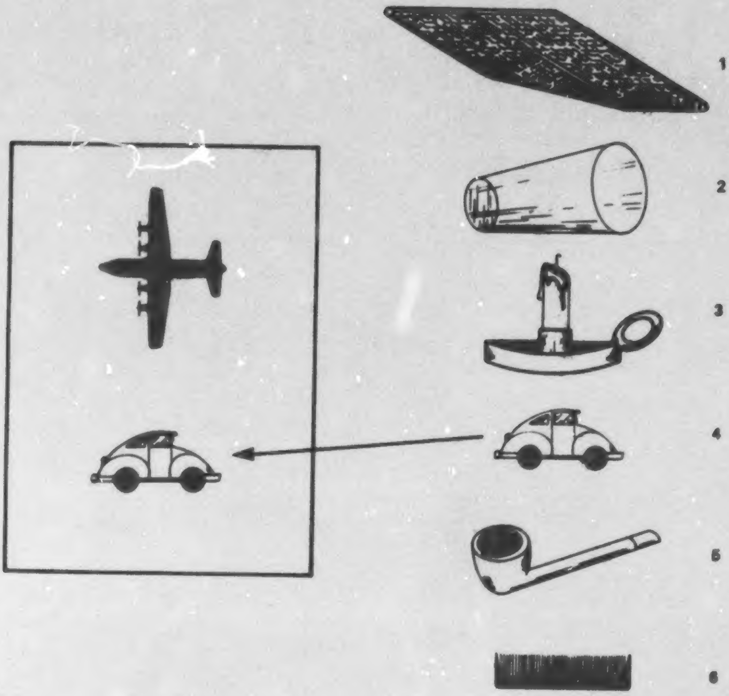
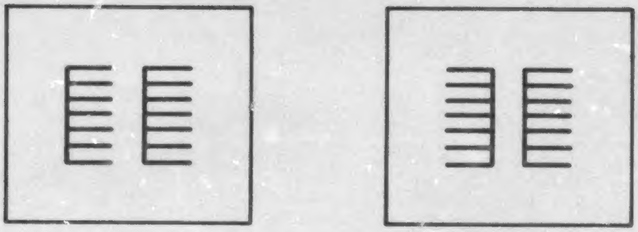
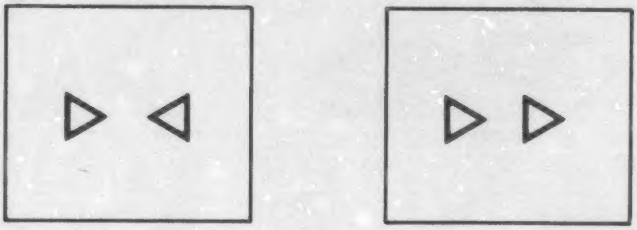


FIGURE 4. Display of objects used to match objects that are functionally equivalent.



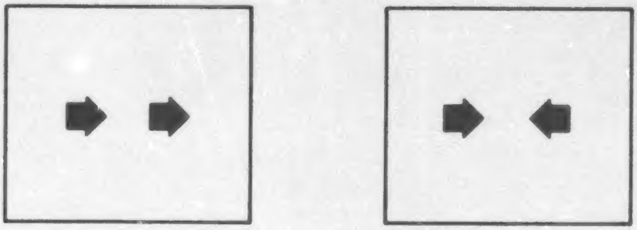
1a. "Translated"

1b. "Reflected"



2b. "Reflected"

2a. "Translated"



3a. "Translated"

3b. "Reflected"

FIGURE 5. Display of stimulus cards used to test the ability to make abstractions about geometric properties.

new stimulus pairs were presented, at which point a new concept was introduced. Four concepts were presented: one referring to quantity (more vs. fewer), one referring to size (large vs. small), and two referring to spatial orientation (centered vs. off-center and mirror-image vs. parallel image).

The results obtained suggested that: (a) communicative ability, as evaluated in a natural context, is directly related to the ability to match objects on the basis of functional properties, and (b) the ability to make abstractions regarding geometrical properties is not related to communicative abilities or the ability to match objects on the basis of functional properties. Subjects with limited communicative abilities performed consistently poorly on tasks 5 and 6 which require an ability to group objects on the basis of associated actions. Instead, they tended to make their selections on the basis of material properties, e.g., shape, color, size, or transparency. Nevertheless, poor performance on these last subtests did not serve to make predictions about the ability to learn abstractions based on geometric properties. On the contrary, several subjects with minimal communicative abilities performed extremely well on these latter tasks. Preliminary investigations with non-autistic control groups suggest that the autistic group as a whole does relatively well on those tasks that require abstractions about geometric properties and visuo-spatial relationships. Apparently, these tasks sample an area of skill that could, in turn, be used in the selection of appropriate vocational tasks and training practices and leisure-time activities. Furthermore, many autistic individuals may do better in "academic" subjects such as mathematics if tasks are presented in such a way as to emphasize geometric and visuo-spatial components. In order to maximize these strengths, a curriculum would include a large portion of nonverbal tasks.

The results of the conceptual assessment are also consistent with the idiosyncrasies of autistic language use. The problem exhibited by autistic individuals when they are asked to make associations on the basis of dynamic rather than static properties are consistent with the literal use of labels, as well as with the type of words that are mastered (i.e., those that refer to fixed properties of things rather than to their use). These idiosyncrasies have probably not received sufficient attention when it comes to the design of teaching strategies. Teaching practices which rely on the repeated use of the same pictorial materials might actually strengthen those idiosyncrasies; referents of own or observed action might be more appropriate targets for functional language teaching.

Another area of recent psycholinguistic exploration examines the functions of children's early speech, particularly the different functions that emerge during the course of development. While this type of research has not directly involved students with autism, the findings may ultimately serve as guidelines for the development of intervention efforts. For example, Halliday (1975) reported that his son's first utterances served as requests for things, as well as for people's attention, and that other, cognitively more advanced functions, were added later. The speech of those autistic individuals who have acquired some functional language often seems limited to requests for concrete things and immediate action. Normal development may indicate the direction in which to go.

In summary, the functional orientation of psycholinguistic research that has recently emerged may greatly enhance our understanding of the autistic syndrome, particularly regarding the interaction of social, cognitive, and linguistic development. Such broadened insights may distinguish autism from other developmental disabilities as well as serve to upgrade current teaching practices to severely handicapped students in general.

CURRENT LANGUAGE TEACHING PRACTICES

The shortcomings of current language teaching practices relate to content as well as technique. This section will examine both matters separately, beginning with the question of content. As pointed out earlier, problems with teaching content are an immediate reflection of the limited understanding of the nature of the autistic syndrome and of the predominantly structural orientation of psycholinguistic research. These shortcomings are illustrated through a critical review of some common practices.

The Role of Speech in Language Teaching

Until recently, language teaching efforts primarily emphasized the use of speech rather than other non-oral alternative modes of communication. Recently, the use of speech has become somewhat de-emphasized; this trend will most likely continue because of a growing awareness of the fact that speech and language are not the same and because of the successful use of non-oral systems of communication with severely handicapped invididuals. Apparently, the production of speech does not imply language, and language content can be communicated through other channels than speech. The autistic syndrome, as is often characterized by meaningless echolalia, is one of the clearest illustrations of the fact that language ability cannot be inferred from proficiency in speech production. Furthermore, the amazing accomplishments of apes trained to use signs or other alternative language systems clearly indicate that language can occur in the absence of speech. Nevertheless, the evaluation of language abilities in autism is in many cases invalidated by misinterpretations of the apparent proficiency in the production and imitation of speech. Hence, children will be less likely to benefit from alternative, non-oral communication systems despite chronic deficiencies in the comprehension of the spoken word. (It should be pointed out here that the teaching of signs to autistic children with very limited non-verbal communication skills is not going to provide an instant "break-through." Teaching will be tedious and time-consuming when working with children who are missing the nonverbal groundwork of functional communication).

The selection of the most appropriate non-oral communication system presents yet another stumbling block. Since signs are the most widely used, they generally constitute the first choice. However, it has not been clearly determined that signing should always be the road of choice. Some of our own experiments suggest that autistic individuals may more readily learn to discriminate between word pairs when they are presented in written as compared to signed or spoken form (Schuler, 1979a). Similar findings were reported by LaVigna (1977) who was able to teach written word labels to autistic adolescents who had failed to acquire any speech. Apparently, many autistic individuals do better when presented with non-transient stimuli (stimuli of a visuo-spatial nature that are not patterned over time) than with transient stimuli (DeMyer, 1976). This raises questions regarding the appropriateness of either speech or signs since both are time-bound, requiring the ability to attend to and retain transient stimuli. On the other hand, signs, because of their semi-transient (movements of hands over time are superimposed upon finger configurations) may serve to bridge the gap between transient and non-transient stimuli. These issues demand further clarification. Criteria need to be developed for use of a particular system with a particular student. Nevertheless, the effectiveness of language teaching approaches may be greatly enhanced through the use of non-oral communication systems.

Speech Functions

No systematic criteria have been applied to decisions on what kind of utterances to teach at which point. Words, phrases, or utterances targeted for teaching have generally been selected in a somewhat haphazard manner. If any systematic considerations are given, they are primarily structural. Those utterances that sound most impressive (that is, are syntactically most complex) are generally selected, but, in order for words to be functionally integrated into one's behavioral repertoire, the outcome of their use should be considered. For instance, many language teaching efforts focus on rather meaningless structures as "noun + is + verb + ing," "That is a noun," and so on. Besides being out of context, these utterances are largely irrelevant to individuals with limited verbal or non-verbal communication skills because they do not serve to provide for immediate changes in environment. Rather, such utterances are normally followed by subtle social reactions, e.g., a nod, a smile, a continued verbal exchange, if there are any overt consequences at all. Consequences of such subtlety are not likely to maintain the verbal output of individuals with limited communicative skills. Hence, it should not be surprising that generalization may not occur. Utterances that are followed by clearcut and relevant consequences, (e.g., food, toys, hugs, or other privileges, or the withdrawal of an aversive stimulus) are more likely to be maintained. This may be demonstrated by the fact that much of the functional speech of autistic individuals consists of some type of request. Even phrases that do not normally function as a request may be used for that purpose (e.g., "Say: do you want peanuts," as a request for peanuts). Obviously, requests should not be the ultimate end of all teaching efforts. However, they may be an effective start. The literature on the functions of normal speech may provide some guidelines for the teaching of more advanced speech functions.

The Rules of Conversation

Another consequence of the emphasis on structure lies within the neglect of the rules of use. Autistic individuals are known for their "out of the blue" remarks and absence of give and take in a conversation. Not only are they ineffective as speakers, they also lack listening skills. They do not know how to obtain and maintain the attention of the listener, and also fail to give a speaker feedback in terms of approval, further questions, or amazement. Verbalizations will often occur without the non-verbal groundwork. Rather primitive non-verbal requests, such as pulling someone's arm, may be out of synchronism with verbal statements that are not clearly communicative. Similarly, intonation and facial expression often do not match verbal content. Many autistic individuals need specific training on how to relay messages, ask questions, run errands, and so on. This means that teaching should take place in a real-life or role-playing situation, and that efforts should be made to integrate verbal and non-verbal behavior. For instance, the use of facial expression and tone of voice may need to be taught. The effective coordination of speech and nonverbal forms of expression along with knowledge of and adherence to rules of discourse presents a tremendous challenge to those who teach functional language to autistic individuals. Hopefully, gained insights into the ways in which normal children acquire this type of knowledge will help to upgrade current language teaching practices.

Passive vs. Active Responses

Passive responses, such as pointing, are a common element of language teaching procedures. The term "passive" is used here to refer to those responses that do not incorporate active motor responses. Objects are pointed to, rather than manipulated. For instance, tasks that are commonly presented require the student to point to a particular object when given such instructions as "show me" or "point to." However, it has been proposed that motor actions should constitute a first step in discrimination learning (Bricker and Bricker, 1970; 1971) when low-functioning, non-symbolic children are concerned. It was argued that discriminative motor movements in the presence of an object might serve to transfer stimulus control to the spoken word, a phenomemon sometimes referred to as "motor mediation." In fact, several studies that report on the teaching of signs to autistic and other severely handicapped nonverbal students attribute teaching successes to the role of motor mediation (Bricker, 1972; Creedon, 1975; Miller and Miller, 1973; Stremel-Campbell, Cantrell, and Halle, 1977). Many variables are involved when it comes to a comparision of the effectiveness of various alternative communication systems. Nevertheless, the issue of active motor responses deserves further consideration, particularly since early symbolization in normal children reportedly takes place in the context of their own motor action (Bates, 1976; Bloom, 1973; Piaget, 1952). By their very nature, signing responses always incorporate active motor behavior. Due to the problems in prompting speech responses and the sophistication required to shape speech behavior, much speech training employs the receptive mode. If motor mediation is indeed crucial to the acquisition of symbolic behavior, speech teaching practices should be upgraded to include more motor action when stimulus material is presented, responses are targeted, and consequences are applied. For instance, many individuals with limited communication and minimal speech discrimination skills will respond correctly to several stereotyped commands. These correct responses may be attributable, in large part, to the presence of contextual cues, but the fact that distinct motor responses are involved may also play a role. Motor mediation issues deserve to be further investigated. It may be worthwhile to investigate, for example, whether labels that require that one or more objects be manipulated are more readily acquired than labels that require a simple pointing response. The idea that verbs are more readily acquired by low-functioning children than nouns has been supported by classroom observations and preliminary research, but needs to be more formally investigated. Also, labels may be more easily learned when they refer to objects that are familiar and/or subject to student's exploration. Similarly, it may make a difference whether labeling responses serve as a request, i.e., when correct responses mean access to some favorite toy, food, or something else that is highly motivating. Several recent studies support this notion. Saunders and Sailor (1979) suggest that responses that serve to gratify needs (i.e., are functional and specific) are learned more easily. The use of more specific and functional forms of reinforcement seem to: (a) increase the rate of acquisition of discriminative response; (b) raise the student's overall level of interest and attention (novelty effect); and (c) enhance generalization, because the reinforcement provided will be a closer approximation of real word conditions than when one single arbitrary reinforcer is used. However, the issues of functionality and motor mediation are interwoven because use of differential consequences implies some form of motor action to take place subsequent to correct responses. These signals for differential action might serve as mediators in the discrimination learning task at hand. The issue that needs to be resolved here is whether response functionality or motor mediation or a combination thereof is more crucial to accelerated learning. Responses that are both passive and non-functional are probably the least desirable of all choices, yet they are a common ingredient of language teaching programs.

Teaching Sequences

The design of language teaching programs invariably poses the question whether certain sequences of program steps are more effective than others. A common position in teaching language is that the production of verbal utterances should be preceded by verbal imitation skills, which should be preceded by nonverbal imitation skills (Sloane, Johnston, and Harris, 1968). Nevertheless, while such a progression appears sensible, it is not based on substansive research. While the ability to imitate speech seems closely tied to contextual speech, nonverbal imitation skills might not be tied to verbal imitation skills. In fact, research on response classes in verbal imitation training does indeed indicate that verbal imitation skills are not a spontaneous by-product of non-verbal imitation training (Garcia, Baer, and Firestone, 1971). The problem in making inferences about skill sequences that emerge during the normal course of development is that antecedence does not imply causality. For instance, on the basis of the fact that normal children crawl before they walk, one cannot assume that crawling is a prerequisite for walking. Caution should, therefore, be applied in postulating "laws" about fixed order in skill acquisition. When one deals with a handicapped population, "laws" about sequences in skill acquisition become even more questionable. After all, when organic limitations are involved, skills may have to be established through alternative routes. Similarly, caution should be applied in making inferences about normal development on the basis of effective teaching or intervention techniques.

In deciding the most effective sequence for teaching complex skills, the main challenge lies in combining knowledge of normal development, common sense, and understanding of motivational factors and task analysis. A complex skill may be broken down into steps that do not represent normal acquisition but optimize motivation, because the steps are so carefully designed that a successful progression is guaranteed and/or because maximal rewards are provided for correct performance.

Inferences on the basis of normal development become particularly questionable when the nature of the normal acquisition process is not well understood, as is the case with language. This becomes even more difficult when the entry skills to be utilized are out of line with normal development, as in the cases of developmental discontinuity associated with autism or other severely handicapping conditions. For instance, when speech production skills are more proficient than communicative abilities, one needs to decide whether first emphasis should be placed on communicative intent, since non-verbal communicative skills normally precede their verbal counterparts. Perhaps the first steps of teaching should focus on appropriate use of pointing, showing, and gazing behavior and on the appropriate use of intonational features. Similarly, the teaching of a non-speech communication system that allows for careful step-by-step progression and effective prompting, and that only requires relatively simple discriminations, may precede the teaching of a more complex system, such as speech or signs. This may establish the groundwork for communicative intent and symbolization. A distinction should be made here between communicative and cognitive prerequisites for functional speech. Such a distinction is usually not made when it comes to controversies about the role of cognitive prerequisites in language acquisition. The argument about cognitive prerequisites cannot, however, be resolved if a distinction is not made between the various language functions that may be involved. Learning to use speech to draw someone's attention obviously implies awareness of the presence of the other and the likelihood of subsequent changes in that person's behavior. This may imply some communicative knowledge, but probably does not indicate advanced object permanence skills. However, some cognitive abilities are presumed when statements are made about abstract properties of things (e.g., inferences about observed events), particularly when these statements are detached from their immediate referents. Increased knowledge of normal acquisition patterns and accumulated expertise in task analysis and motivational "engineering" should help to eliminate some of the arbitrariness in program design and thereby upgrade teaching practices.

TEACHING TECHNIQUES

Current language teaching practices not only deserve to be critically examined in terms of what they teach, but also in terms of how they teach. We are referring here to differences in task presentation, which includes variables in reinforcement, instructional stimuli, response definition, progress criteria, program design, timing of teaching trials, and so on. The variables involved are innumerable. Matters of concern apply to teaching in general, not only to language teaching; in this context only a few issues that are of immediate relevance to language teaching practices will be discussed. For a more extensive discussion, see Goetz, Schuler, and Sailor (1979).

Stimulus Dimensions

Language teaching practices often attempt to teach a basic labeling repertoire through correct pointing responses to labeled objects. While the passive nature of the responses involved may not help early symbolization, there are other points of concern. The first has to do with the type of materials used. In most settings, teachers and support staff have easy access to packaged sets of pictorial materials which can be used as referents for the teaching of labels. However, these materials may not be appropriate for use with students with limited symbolic skills since the pictures themselves may lack meaning. It cannot be assumed that severely handicapped children can match three-dimensional objects with their two-dimensional representations. If pictorial materials are used, teachers should make sure that the students can match them with real life objects and possibly with other pictures. If these skills are lacking, specific training programs may be designed to teach them.

The second point relates to the use of one particular object or picture vs. the use of multiple examplars of the same concept. Often, the same picture is used over and over when a particular label is taught. Learning may accelerate when varied materials, (e.g., five different cups colored and black/white photographs and drawings) are used to teach that particular label. If nothing else, chances of generalization will be increased.

Another aspect of stimulus presentation pertains to the use of cues that serve as signals for the student to respond. It should be recognized that the cues presented will acquire meaning and should, therefore, be carefully chosen. For instance, "point to cup" will be associated with the action required for the correct response. Therefore, it is extremely important that the cue presented is relevant. For a child who is largely non-verbal, excessive verbalization should be avoided. If "cup" is taught, then emphasis should be placed on that label. If carrier phrases are used, they should be de-emphasized through pausing, decreased emphatic marking, and so on. The most relevent part of the instruction should be emphasized. While this may be easily accomplished when single words are taught, decisions are more difficult when relational terms and multiple word phrases are introduced, such as when prepositions are taught. For instance, Sailor and Taman (1972) taught the expressive use of "in" and "on" to three autistic children. A comparison was made between "in hat" vs. "on hat" and "in" accompanied by two different stimulus objects. It was found that students performed better when the two different objects were used. One interpretation of these results may be that the relevant distinction was obscured in the first condition. Also, it is questionable whether students in the second condition indeed learned "on" and "in" or rather learned two different action patterns in response to the total instruction. In other words, "in" and "on" may not have been differentiated as distinct entities. A study reported by Frisch and Schumaker (1979) supports the latter interpretation. They found that one student was unable to learn the distinction between prepositions when separate objects were used. Apparently, he attended to the relevent object labels rather than the relevant prepositional labels. Some further research on this issue (Guralnick, 1976; Lee, 1978) shows that overall conclusions are not that readily drawn. Many variables are involved. Some studies use the receptive mode, other the expressive; some look at acquisition, others at generalization. Furthermore, detailed descriptions of the student's entry skills are generally lacking. Obviously, it makes a difference whether one is dealing with a student who is unable to discriminate consistently between single labels, another student who masters some single labels, or yet another who operates at the level of two or more word constructions. However, what becomes clear is that the ways in which instructions are presented do make a difference, and that further experimentation is needed.

Timing of Instructional Activities

In teaching labels, it appears to be common practice that the same stimulus is presented over and over until continuous correct responses are obtained. Only at that point is another task introduced or the task at hand expanded. Given that most autistic individuals become highly confused when too much stimulus input is presented at once, it makes sense to limit stimulus input in such a manner. Nevertheless, mass-trial practices may thwart discrimination and generalization, because high rates of reinforcement are provided for indiscriminate responses. A complaint commonly expressed by teachers is that students fail to learn to respond correctly to a second command once they have learned to respond consistently to a first one. What is missing is discrimination. Perhaps it would be preferable to work on two tasks at one time, or perhaps on a sequence of different tasks placed in a functional context. Some preliminary research that is currently carried out at the deaf-blind demonstration classroom affiliated with San Francisco State University supports the latter. The main question seems to be: when is it appropriate to train only one task, and when it is appropriate to train several tasks or to work on a functional sequence? Further research in this area is needed.

Another issue related to the timing of instructional activities concerns the progression through a series of teaching trials. In some cases, long pauses between intervals may set the stage for excessive self-stimulatory behavior, but excessively short pauses may not allow for sufficient attention to the task at hand. Some of these variables are currently under investigation, and are discussed in the chapter by Dunlap and Koegel (1980).

The effective timing of instructional stimuli requires a keen awareness of subtleties in students' non-verbal behavior (e.g., direction of gaze, degree of stereotyped behavior). Skillful timing of instructional activities may, therefore, be seen as a sign of effective communication between student and teacher.

The issues discussed so far are only a few examples of questions one may raise with regard to teaching techniques. For instance, another area of concern related to communicative behavior relates to the demands placed upon the student, including the complexity, type, and frequency of behaviors required. Much of the success of a teaching program depends on how well teaching steps are broken down to allow for a step-by-step progression, the degree of consistency, and the rate of reinforcement provided. Well designed teaching programs seem to minimize the frequency of aberrant behaviors. (For further discussion of these issues, see Gaylord-Ross, 1980). Also, certain tasks seem invariably to trigger more behavior disruptions than others. To some extent, the aberrant behaviors so typical of autism may be controlled through the careful selection of teaching strategies. Tantrums, self-injury, and so on may even be viewed as communicative when they serve attention-getting or escape functions. (For a review of the functions of aberrant behavior, see Carr, 1977). Effective programming that minimizes disruptive behavior through prevention or through the teaching of more adequate ways of expression or better ways of coping can be viewed as enhancing communication in its broadest sense. What matters is that the ways of expression that are taught are understandable, socially acceptable, and not physically harmful or restrictive. Even when language skills as such are not the primary focus of educational strategies, they may serve to improve the interaction between the autistic individual and his or her environment and thereby enhance communication level. Careful educational programming geared to developmental and learning abilities of an individual student may perhaps constitute the greatest contribution to the development of effective communication.

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SOCIAL BEHAVIOR PROGRAMMING
WITH SEVERELY HANDICAPPED AND AUTISTIC CHILDREN

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One of the most persistent and predictable behavior patterns exhibited by autistic children is social withdrawal. Specific behavior manifestations of withdrawal may include: lack of eye contact with social partners, active physical isolation when approached by peers, display of tantrums when approached by peers, and minimal social initiations (Strain and Fox, in press). Of course, autistic children also display a number of behavioral deficits and excesses that severely limit the opportunity for positive social contact. Those behavioral deficits that are particularly problematic include the lack of functional speech and the absence of appropriate toy use. Often observed behavioral excesses that inhibit positive social contact include self-injurious and self-stimulatory behaviors (Strain and Cooke, 1976).

Although the etiology of social withdrawal and the accompanying behavioral deficits and excesses is not absolutely clear, it is unquestionable that the specialized educational environments in which most autistic children are served provide few opportunities for social skill acquisition and maintenance. Since the vast majority of autistic children are enrolled in developmentally segregated classes, the availability of peers for interaction and social behavior programming is severely limited. It should be noted also that the level of social interaction exhibited by normal preschool and school-age children is influenced significantly by the social skills and responsiveness of peers available for interaction (Tremblay, Strain, Hendrickson, and Shores, in press). In addition, Hendrickson, Strain, Tremblay, and Shores (1979) have observed that the maintenance of behavior change following intervention on withdrawn children can be enhanced by integrating these youngsters with socially competent peers.

Regardless of etiology, a number of adult-mediated and peer-mediated strategies have been employed successfully to remediate social withdrawal in severely handicapped and autistic children. This chapter will discuss the following topics related to remediating social withdrawal: (a) importance of social withdrawal as a handicapping condition; (b) adult-mediated interventions; (c) peer-mediated interventions; (d) assessment of social behavior interventions; and (e) generalization of treatment gains.

SOCIAL WITHDRAWAL AS A HANDICAPPING CONDITION

When compared to other areas of curricular programming for autistic children, research and development in the area of social interaction skills have been minimal. This situation is both puzzling and disturbing when one considers the typical course of social behavior acquisition, as well as the long-term consequences of social withdrawal.

A cursory examination of social behavior development during the first two years of life suggests that social withdrawal must be considered as one of the most profound forms of developmental delay or deviancy exhibited by autistic children (Strain and Fox, in press). For example, a number of early appearing response patterns of newborns indicate a predisposition to respond selectively to social stimuli. For example, the newborn displays an exceptional ability to discriminate between such fine-grain phonic differences in adult speech as "b" and "d." Similarly, newborns of either sex exhibit a consistent physical orientation response toward the direction of female as opposed to male voices that are both unfamiliar or familiar. Interactions between normally developing infants as young as three months of age and their caretakers closely match the dialogue structure of verbal exchanges between adults. Specifically, infant and caretaker participate in vocal dialogues characterized by a talk-listen, listen-talk sequence and few interruptions of one another (Anderson, Vietze, and Dokecki, 1977). Even at this early age, it is clear that the infant carefully regulates his or her speech to the vocal behavior of social partners.

During the first few months of life, a paramount reinforcement for infant behavior is social attention. In studies using both familiar and unfamiliar adults' contingent social attention, infants' vocalizations, activity level, and manipulative responses have been altered systematically (see Rheingold, Gewirtz, and Ross, 1959); Weisberg, 1963).

As the infant begins to babble on a regular basis, rather distinct differences emerge in the complexity of these vocalizations across social and nonsocial contexts. For example, most of the vocal behaviors exhibited by infants as they examine a part of their anatomy or a toy are redundant (for example, "ba, ba, ba, ba" or "oh, oh, oh") and contain few alterations in pitch or volume. In contrast, the vocal behavior of the infant in the babbling period is quite complex when a caretaker is present, particularly in a face-to-face orientation. Not only can one observe fluctuations in the context of speech (for example, "ba, da, ga"), but the infant changes the pitch and volume of utterances such that one may perceive an "exclamatory" or "interrogatory" babble.

Toward the end of the first year, infants begin to exhibit a predictable stress response when they are removed from the presence of one caretaker (usually mother) with whom they have developed a primary attachment (Bowlby, 1969). The literature on infant attachment has been characterized by considerable theoretical and methodological debate; however, few would argue that this transitory social response pattern does not regularly occur across child-rearing situations that include both singular and multiple caretaking traditions (Ainsworth, 1963).

Although the opportunities for peer interaction during the first two years of life are often limited, these early social encounters do represent quite regularized events. In one of the first studies of infant-infant interaction, Buhler (1931) found that children from 6 to 18 months of age engaged in frequent, positive interaction when they were placed together in daily play sessions. The majority of the positive contacts were composed of sharing responses involving a favorite toy or material. It is important to note that the children were not encouraged in any way to play cooperatively with each other. In a later study of peer-peer interaction among infants, Maudry and Nekula (1939) observed a developmental shift in the number of positive and negative interactions across youngsters 9 to 25 months old. Specifically, dyads of children 9-13 months often quarreled over ownership of a toy, whereas interactions among children 19-25 months were largely positive.

From approximately 12 months onward, children begin to use multiple word utterances that are clearly rule-governed. The syntax of these two and three word utterances apparently develops without systematic attention applied to either grammatically correct or incorrect statements (Brown, 1973).

Taken together, the social behavior developments during a child's first two years are remarkable indeed. Auditory and vocal functioning are keenly attuned to the behavior of social partners; interactions with age-peers are sought out, and they become quite positive; a sophisticated system of verbal communication is developing rapidly; and social attention has a profound influence on the child's entire behavior repertoire. When these developments are contrasted with the autistic child's generalized avoidance of social stimuli, one can readily understand the clinical and developmental significance of social withdrawal.

Not only does social withdrawal represent a dramatic departure from the normal course of child development, but this behavior pattern is also predictive of long-term, negative consequences. Indeed, Hartup (1978) and Strain, Cooke, and Apolloni (1976) have observed that social withdrawal during the early childhoold years places children at risk in the areas of language acquisition, moral values, and socially acceptable methods of expressing sexual and aggressive feelings.

The effects of social withdrawal may also impact on social adjustment during adolescence and adulthood. Using a retrospective research paradigm, Birren (1944), Frazee (1953), and O'Neal and Robins (1958) all documented that a majority of adults requiring psychiatric care were described by parents and teachers as shy, withdrawn young children. The results of several longitudinal studies also indicate that childhood social withdrawal may have negative consequences. Roff, Sells, and Golden (1972) found that children described as "loners" during the elementary grades eventually were represented disproportionately in groups of juvenile delinquents, school drop-outs during adolescence, and adults who required mental health services. Similarly, Robins (1966) observed that socially withdrawn children were more likely than socially skilled children to be referred for psychiatric treatment as adults. In summary, social withdrawal represents a response pattern that severely limits the child's acquisition of many adaptive behaviors and thus may set the occasion for marginal adjustment throughout adolescence and adulthood.

ADULT-MEDIATED INTERVENTIONS

Of the various strategies employed to remediate social withdrawal in severely handicapped and autistic children, adult-mediated social attention has been the most widely used approach. In an initial study by Strain and his colleagues (Strain, Wiegerink, and Hester, 1975), two severely behaviorally handicapped preschool boys were the targets of adult-mediated attention. Each of the boys was identified prior to 18 months of age as severely disordered. Both boys exhibited few, if any, appropriate verbal behaviors, and each was consistently oppositional to adults' requests and typically engaged in lengthy tantrums. The preschool teacher's report that these youngsters did not interact positively with peers was confirmed by baseline observations. Intervention employed a multiple baseline design across play materials. In this design, differential attention from the regular classroom teacher was first applied during play with pegs, then during play with blocks, then with an athletic ball, and finally during water play. Throughout daily 30-minute free-play periods, the boys participated in a randomly determined order of play activities. When baseline conditions were in effect, the teacher sat the boys down in close proximity to each other and the designated play material and then instructed them that it was time to play together with the particular material. No other programmed consequences were in effect. The subjects' typical response during baseline was to quickly leave the play area and wander about the classroom. During intervention conditions, the teacher provided occasional verbal prompts and social praise for each instance of cooperative activity with the play materials. Verbal prompts consisted of statements such as, "Pass the block to Steve," or "Roll the ball to Tom." Social praise events included statements such as, "Good Steve, you rolled the ball," or "Tom, I like the way you're playing with Steve." The intervention resulted in an immediate increase in the cooperative play behavior of the target subjects. In fact, the boys eventually engaged in cooperative activity for over 90 percent of the free-play period.

In a follow-up investigation, Strain and Timm (1974) attempted to determine the effects of differential teacher attention on target as well as non-target children. The primary subject was a four year-old girl with multiple behavior problems. She displayed no functional speech, apparently was not aware of potentially dangerous situations, and often behaved as if she were deaf and blind. Her parents reported that these behaviors were evident prior to her second birthday. The other children in the classroom were characterized by a wide variety of behavioral deficits. Several youngsters displayed delayed language acquisition but no other behavior problems. The remainder of the children were language delayed and also engaged in frequent tantrums, oppositional behavior, and self-stimulatory activity. During initial baseline assessments in a free-play period, it was observed that the children seldom engaged in any positive interaction. During the initial intervention, two graduate students directed highly specific verbal praise to any of the class peers who either initiated some positive interaction with the target subject or who responded positively to the target subject's social initiations. At this time no feedback was given to the target, Martha, regarding her behavior. This intervention resulted in an immediate increase in the social behavior of the peers toward the target subject and a similar increase in Martha's social behavior. Following a return to baseline, in which all social praise was terminated, a second intervention was begun. This time Martha was given verbal praise each time she interacted with her peers, and they received no specific feedback on their social behavior. Once again, the intervention was effective in producing an immediate and substantial increase in the level of social behavior exhibited by both the target subject and her peers. Unlike the earlier intervention phase, praise directed to the target subject produced a differential increase in the initiated social behaviors of the subjects. Specifically, Martha exhibited approximately five times the number of social initiations as did her peers. This outcome suggests that when failure to initiate social contact is the primary presenting problem, then praise directed specifically toward the target child would be the intervention of choice.

Although the results of the Strain and Timm (1974) study clearly showed that a social praise intervention may produce positive behavior change with children who are not the direct recipients of this treatment, a number of important applied questions remained unanswered. For example, do the individual behavior repertoires of nonreinforced children affect the degree of treatment "spillover" observed; and do "spillover" effects vary as a function of the number of children targeted for treatment? A study by Strain, Shores, and Kerr (1976) addressed these questions. Three severely handicapped preschool boys and their seven classmates were studied. The first subject, Dan, was assaultive toward his peers and was observed to hit, push, and kick them when they were not looking. He was also language delayed by approximately two years, and would engage in severe tantrums when things would not go his way. During these episodes he would bite and scratch himself and others. Dan did possess an extensive motor-imitation repertoire and his behavior could be controlled by differential social attention. Hank displayed similar, though less intense negative behaviors with peers. He often quarreled with and hit peers in his attempts to confiscate toys. Like Dan, he was language delayed by approximately two years, had a well-developed motor-imitation repertoire, and social praise had been established as an effective intervention strategy. The final target subject, Ricky, displayed a different pattern of social withdrawal. He would sit idly in the corner of the class repetitiously playing with a toy or humming. His imitative repertoire was extremely limited and edible reinforcers were used to control his behavior in other situations. The design of this study was a multiple baseline across subjects, combined with a withdrawal of treatment for each subject. The temporal sequence in which intervention was in effect allowed an assessment of direct and "spillover" effects when one and two target children were under treatment. Because intervention began on each subject at different times, it was also possible to assess the behavior of these children as members of a nonreinforced peer group. The basic treatment approach applied in earlier studies was used here, namely, differential social attention for positive interaction. In all cases, social praise was directed specifically to that target subject(s) who was scheduled for intervention on a particular day. The results indicated that: (a) the social praise intervention produced an immediate increase in positive social behavior when applied to each subject; (b) "spillover" of treatment occurred for Dan, Hank, and fellow classmates, but not for Ricky; (c) negative behaviors by Dan, Hank, and fellow classmates were substantially reduced when intervention was in effect; and (d) "spillover" effects were greater when intervention was applied to two children on the same day, rather than one at a time.

Several behavioral characteristics of the subjects were likely responsible for the differential "spillover" effects. First, it seems likely that Ricky's extreme isolation may well have limited his opportunities to observe the delivery of social praise to other target children when they participated in positive interaction. Since "spillover" effects were dependent upon the nonreinforced child imitating the appropriate behavior of reinforced subjects, it is clear that Ricky's poor imitative repertoire also contributed to the lack of indirect effects on this child. Finally, Kazdin (1973) has noted that reinforcement delivered to target children may act as a cue to nonreinforced subjects that such consequences may be forthcoming if they engage in similar behaviors. Here, it is important to recall that social praise had been used previously as a potent reinforcement agent for Dan and Hank, but not for Ricky.

In conclusion, the studies on "spillover" of treatment effects indicate that such indirect treatment may be expected to occur if teachers: (a) program indirect consequences for children with some positive social responses in their repertoire; (b) select children for indirect treatment who display imitative skills; and (c) select positive consequences for reinforced and nonreinforced children that have a clearly established history of controlling behaviors of both groups of youngsters.

In all of the adult-mediated studies described to this point, the removal of programmed intervention resulted in an immediate reduction in the level of positive social behavior by all target children. No maintenance of behavior change was observed. Typically, investigators have attempted to program for the maintenance of positive social behavior change by gradually withdrawing intervention procedures (e.g., Lovaas, Freitag, Kinder, Rubenstein, Schaeffer, and Simmons, 1964; Whitman, Mercurio, and Caponigri, 1970). In all these studies, the withdrawal of treatment was independent of the subjects' behavior. That is, the schedule for fading out the intervention was determined on an a priori basis. In an investigation by Timm, Strain, and Eller (1979), an alternative, response-dependent tactic was used to maintain positive social behavior change. The subjects for this study were three preschool-age boys who ranged in age from 3 years-10 months to 4 years-3 months. The first two subjects, Richard and Anthony, exhibited delayed language development, frequent tantrums, a variety of stereotypic activities and consistent opposition to adults' requests. The third target subject, Stan, was a normally functioning child who displayed little, if any, social interaction with peers. The study employed a withdrawal of treatment design with multiple baseline procedures.

A combination of verbal and physical prompts, plus verbal praise and occasional physical touches contingent upon positive social behaviors were employed to increase the boys' level of interaction. A small flashlight operated by an observer was used to signal the teacher when to deliver prompts and contingent attention events. Following a permission signal, a prompt could be delivered if the target subject was not interacting. Following the permission signal and the delivery of a prompt by the teacher, a praise event could be delivered only if the subject emitted a positive social behavior. After an initial baseline condition in which no programmed intervention was in effect, the lead observer issued 30 permission signals during 5-minute intervention periods. During the second baseline condition no prompts or reinforcement events were delivered to target subjects. In the initial phase of the second intervention condition, 30 permission signals during 5-minute sessions were provided to each child. Systematic withdrawal of prompts and continengent attention events was conducted during phase two of the second intervention condition. Specifically, if the number of social behaviors recorded for a given 5-minute session equalled or surpassed 75% of the mean frequency of positive social behavior obtained for that subject during Intervention I, one permission signal was omitted from the next session. If a child's behavior did not meet this criterion level, then no reduction was made in the number of signals given during the following session. This respondent-dependent schedule of fading was terminated for Anthony when it was discovered that he was unexpectedly leaving the treatment facility. The effects of treatment on the three boys are depicted in Figure 1.

Figure 1 shows that the subjects seldom engaged in any positive interaction during Baseline I. Negative behaviors occurred approximately three times as often as did positive behaviors. When the intensive prompting and reinforcement procedures were begun in Intervention I, each boy's positive

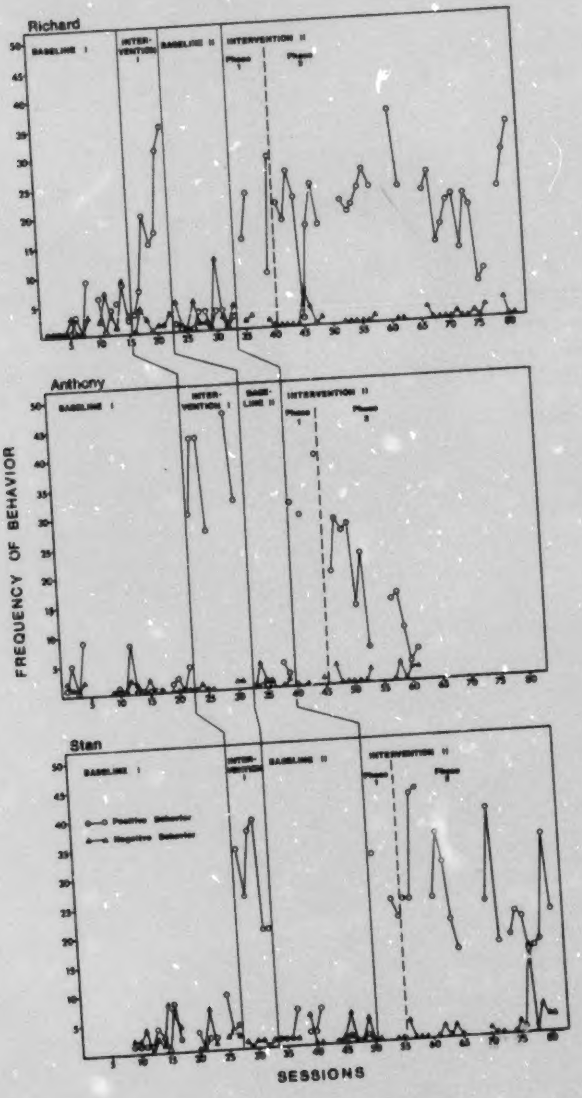

Figure 1. Frequency of positive and negative behavior for Richard, Anthony, and Stan, across all experimental conditions.

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behaviors rapidly increased. A consistent though moderate reduction in negative interactions was noted. When the intervention procedures were terminated during Baseline II, levels of positive behavior declined abruptly. The reinstatement of intensive intervention during the initial phase of Intervention II produced a level of positive behavior by each subject that closely matched the frequency of positive interaction exhibited during Intervention I. The response-dependent fading employed with Richard and Stan successfully maintained positive social behaviors across phase two of the second intervention. During the final three days of intervention for these two subjects, only one permission signal was given per 5-minute session. In contrast, Figure 1 shows that the response-independent fading employed with Anthony resulted in a rapid deceleration in his level of positive social behavior. The results of this study suggest that response-dependent fading tactics may be used to produce sustained increases in the positive social behavior of severely handicapped preschool children. In order to employ this technique successfully, several logistical issues require attention. First, it is likely that teachers could not accurately implement the response-dependent fading without someone to cue their responses to target children. Second, the response-dependent fading used with Richard and Stan was a lengthy process that continued for approximately nine weeks. Thus, it is necessary for practitioners to plan for and commit a significant amount of instructional time if a successful fading process is to occur. Also, it is possible that other withdrawn children would require a more lengthy fading period.

Without a doubt, the efficiency of adult-mediated social praise as an intervention for social withdrawal has been established. However, the fact that an intervention can increase desirable behavior is only part of the information often needed by teachers and other on-line personnel. These individuals are vitally interested in the durability of behavior change, in the possible changes in children's behavior that are not targeted for intervention and in the effects on other children who are not receiving said treatment.

The issue of behavior change durability as relates to adult-mediated treatment of severely handicapped and autistic children has received minimal attention. Where durability has been studied with less severely handicapped populations (e.g., Allen, Hart, Buell, Harris, and Wolf, 1964; Pinkston, Reese, LeBlanc, and Baer, 1973), the evidence is largely negative, even with short-term follow-ups. One might safely assume, therefore, that without specific programming aimed at response maintenance, only transient behavior change could be expected with autistic children. Currently, the systematic, response-dependent fading procedure used by Timm, Strain, and Eller (1979) is the only available tactic shown to produce a durable behavior change under conditions of minimal adult intervention. In addition to issues related to treatment durability, practitioners often voice a concern regarding collateral behavior change accompanying intervention on other behaviors. As Strain and Kerr (1979) have noted, the issues involving collateral behavior change are twofold. First, it would be particularly efficient if intervention could be centered on a few discrete social behaviors and simultaneous changes be observed for other, related forms of interaction. Second, teachers must know whether any undesirable behaviors may emerge as a result of increasing the child's positive social contact. For example, as a withdrawn child is brought into positive contact with peers, this may set the occasion for potential quarrels over toys or materials. Although the available evidence on collateral behavior change is admittedly sparse, the data are quite consistent in pointing to positive side-effects. For example, in those studies conducted by Strain and Timm (1974) and Strain, Cooke, and Apolloni (1976) the target children exhibited many more negative than positive social behaviors during the initial baseline assessment. Although negative behaviors were never intervened on directly, these acts always declined when treatments directed at positive behaviors were in effect. Additionally, Nordquist and Bradley (1973) found that intervention aimed specifically at improving a withdrawn child's social behavior resulted also in an increase in her verbalizations, which never occurred prior to treatment.

In no study reported to date has the adult-mediated reinforcement procedure resulted in the collateral development of inappropriate behavior. Viewed together, the present data on collateral behavior change indicate that teachers might anticipate: (a) an increase in certain positive behaviors that are not targeted for treatment; (b) a reduction in certain negative social behaviors not specifically treated; and (c) no increase in negative behaviors as a result of intervention. Regrettably, the conditions which enhance collateral behavior change of a positive nature are as yet unknown. Strain and Kerr (1979) have suggested tentatively that teachers might increase the probability of positive collateral effects by selecting target behaviors (e.g., cooperative use of toys) that are incompatible with the emission of problematic responses (e.g., confiscating toys) and withholding all attention for these negative behaviors.

An extremely limited data base is available to answer concerns regarding the possible deleterious side effects of adult-mediated reinforcement on class peers who do not receive such treatment. It should be noted, however, that the available evidence uniformly indicates that only positive side-effects accrue. Only two studies, Strain and Timm (1974) and Strain, Cooke, and Apolloni (1976) have examined indirect effects of treatment with severely disturbed children. In each of these efforts, intervention on target children always improved the social behavior of nonreinforced children who had some positive behavior in their repertoire during baseline assessment. The vast majority of the research on indirect effects of treatment has involved on-task or academic-oriented behaviors with normally developing and mildly handicapped children. For example, Kazdin (1973); Christy (1975); and Kazdin, Silverman, and Sittler (1975) all report positive behavior change for target and nontarget children.

PEER-MEDIATED INTERVENTION

Although adult-mediated interventions have been repeatedly successful in producing positive behavior change with severely handicapped and autistic children, a number of factors has led to an increasing interest in peers as treatment agents.

First, when the data from the Strain and Timm (1974) and Strain, Cooke, and Apolloni (1976) studies were reanalyzed, it was found that the immediate temporal consequence of reinforcement delivery was the termination of child-child interaction. That is, the across-day effect of treatment was to increase the frequency of target subjects' interaction. However, children were found to be isolate during the next 10-second recording period following an episode of teacher praise. More recently, Walker, Greenwood, Hops, and Todd (1979) have pointed out that adult reinforcement aimed specifically at increasing the frequency of interaction may produce a series of brief interaction bouts that bear little resemblance to the interaction patterns of normally developing children. A second factor affecting the movement toward peer-mediated programming has been the limited maintenance of behavior change associated with adult-mediated reinforcement. A third and most critical factor concerns the logistical feasibility of applying adult-mediated intervention in settings where large numbers of children require social behavior programming.

A variety of peer-mediated strategies have been developed for use with isolate children. Of these, the peer social initiation tactic has been the most extensively employed with severely handicapped and autistic children. In an initial study, Strain, Shores, and Timm (1977) trained two 4-year-old age-peers to serve as intervention agents with six severely handicapped preschool boys. The target children ranged in IQ from 30 to 58, and each displayed a wide variety of inappropriate and bizarre behaviors. Four 20-minute training sessions were conducted with each of the nonhandicapped age-peers during which they learned and rehearsed a number of verbal and motoric behaviors to engage the target children in social play. First, the peers learned to initiate play by emitting phrases such as, "Come play," "Let's play school," and "Let's play ball." Next, they were taught to engage in those motor behaviors that would naturally accompany the verbal play overtures. For example, the peers would say, "Let's play ball," and then roll a ball to the experimenter. Each session contained 30 discrete opportunities to practice appropriate initiations. On half of these occasions the experimenter would ignore the child's overture for 10 seconds and then say, "Sometimes children will not want to play at first, but you need to keep asking them to play." During an initial baseline period, the six target subjects rarely engaged in any positive interaction while their age-peers initiated only occasional social behaviors toward them. When the peers were first instructed to play with the target subjects, two outcomes were observed. First, each target subject's responses to initiations immediately increased; and, second, the positive initiations of all but one child increased also. Treatment effects were replicated during subsequent return to baseline (low levels of initiations) and intervention phases. The one subject whose level of initiations did not increase was more severely language delayed than his peers and had only a three-word vocabulary ("Yes," "No," and "Mommy") which he did not necessarily use on appropriate occasions.

To determine whether the effects produced by this peer-mediated intervention would generalize to another setting and maintain across a short time-span, Strain (1977) conducted a systematic replication of the Strain, et al. (1977) procedures. Three preschool-age boys were treated by one normally developing age-peer. The target children had IQ's of 55, 47, and 50 and ranged in age from 43 to 51 months old. The children's expressive language development was at a 1-year-old level and they were observed to be extremely oppositional to adults' requests. Two of the boys were echolalic and self-stimulatory. A peer training approach identical to that used by Strain et al. (1977) was employed. Intervention sessions in the withdrawal-of-treatment design took place in a small playroom, and generalization was assessed by observing the subjects in a regular free-play period in their classroom with the peer trainer absent. Maintenance of behavior change across time was assessed by conducting observations in the subjects' classroom immediately or 23 hours after intervention. Data from both intervention and generalization sessions showed an increase in social responding with peer trainer intervention. For two of the subjects, a 5-fold increase in the frequency of positive social behavior obtained during treatment sessions. The remaining child's level of positive social behavior increased from an average of one positive behavior per 5-minute session to an average of 4 per session. For the first two children, an increase in positive social behavior was also observed in the generalization session. Here, the children were responding at twice the level observed during baseline. The child who was affected minimally in the treatment setting showed no sign of generalized behavior change. Maintenance effects were noted also for the first two children, as no differences in performance were noted for generalization sessions that occurred immediately after treatment or 23 hours later.

The differential responsiveness of these subjects to the intervention procedures highlights the need for more extensive and fine-grain behavioral assessments of social withdrawal. From the present data system, it is only possible to say that the child who showed little improvement had a lower baseline level of positive social behavior than his peers. However, other behavioral characteristics may have operated to diminish treatment effects with this child. For example, this youngster engaged in a high rate of self-stimulatory activity and on occasion he would scream loudly when a peer interrupted his behavior.

More direct evidence of the interaction between the inappropriate behaviors of autistic children and the impact of peer social initiations has been provided by Ragland, Kerr, and Strain (1978). When compared to children treated in earlier studies of peer social initiations, the subjects in this investigation engaged in more active withdrawal from peers and adults and more extensive forms of bizarre behavior. The first subject, Sally, had a measured IQ of 35. She was echolalic, frequently avoided eye contact, and engaged in lint-picking, object twirling, and scratching of herself. The second child, Darrin, was a 9-year-old boy who attained a Vineland Social Maturity Scale score of 36 months. His speech was unintelligible and he continually engaged in some form of self-stimulation, including thumb sucking, twirling objects, finger-tapping, and tongue-clicking. The final subject, Dennis, was a 9-year-old boy who attained an IQ score of 64. He had a history of petit mal seizures and bizarre verbalizations. At the time he participated in the peer-mediated treatment, Dennis' primary verbal behavior involved his fantasy of being a car. Also, Dennis was observed to bite and pinch himself when adults made requests of him. The peer trainer in this study was a 10-year-old boy who was enrolled in a class for children with learning and behavior problems. He had a long history of academic failure and disruptive classroom behavior. However, he was a child with exceptional social skills and he got along quite well with his peers. A peer training approach similar to that used in earlier studies was employed. One important change was made. When the experimenter did not respond positively to initiations by the peer trainer, she exhibited some of the self-stimulatory and avoidance behavior typical of the target subjects. The design employed was a withdrawal of treatment tactic with multiple baseline procedures. In other words, intervention was begun and terminated at different times for each child. The initial baseline phase indicated that Sally engaged in no positive or negative social behaviors. Darrin participated in approximately three times the number of negative as opposed to positive behaviors during the initial baseline. Dennis, on the other hand, engaged in an equal number of positive and negative behaviors. The onset of peer social initiations produced an immediate increase in positive social behavior by each subject. In return to baseline and subsequent intervention conditions, this treatment effect was replicated. Besides an increase in positive responding, the social initiation treatment had a tendency to increase negative interactions by Sally and Darrin, especially during the first several days of each intervention phase. Observers in the play setting reported that the peer trainer often interrupted Sally and Darrin while they were engaging in some self-stimulatory activity. When this happened, these children would often scream, run away, or push the peer aside. After the first day that this situation occurred, the experimenter made sure to remind the peer after each session that sometimes children would respond in this way.

In a final study using peer-mediated treatment, Strain, Kerr, and Ragland (1979) attempted to compare the effectiveness of two treatment tactics: peer social initiations, and peer prompting and social reinforcement. Four elementary-age children served as target subjects. Earl was a 9-year-old boy with an IQ score of 38 who was first seen at a psychiatric facility at age three. At the time of the study, he was not toilet trained, often cried for long periods of time, and was observed to engage in a high rate of self-stimulatory activity. Most of his verbal behavior consisted of calling his own name. Sue was a 10-year-old girl who was echolalic, extremely oppositional to adults' requests, and observed to tantrum when approached by peers. Tom was a 10-year-old boy with a tested IQ of 44 who engaged in a high rate of self-stimulatory behavior and unintelligible verbalizations. The final subject, Carl, was a 10-year-old boy who was described as hyperactive and non-responsive to adults' requests. During a typical free-play period he would pull fabric from the carpet, slap a ball against the wall, and giggle.

Half of the peer training was identical to that employed by Ragland, Kerr, and Strain (1978), while the remaining portion taught the peer a prompting and reinforcement strategy. Here, the experimenter told the peer that he would be getting two of the children at a time to play with each other. The peer was instructed to rehearse such prompting statements as, "Roll the ball to Carl," "Give Sue a block," and "Push the truck to Earl." Later, the peer began to practice such praise statements as "Good, Tom. That's the way to play," and "Very nice, Carl." The investigation employed two separate withdrawal-of-treatment designs (ABAC and ACAB), with two subjects exposed to each order of treatment. Sue and Carl composed one dyad and Tom and Earl the other. During the first intervention phase, the prompting and reinforcement treatment was applied to Sue and Carl, and peer social initiation for Tim and Earl. These treatments were later reversed. A generalization assessment was conducted each day 23 hours after intervention. The findings suggest that: (a) both treatment procedures resulted in an immediate increase in the level of positive social behavior by each dhild; (b) a comparable behavior change was associated with the two treatment procedures; and (c) no generalized behavior change was associated with either treatment procedure.

It has been well established that peer-mediated interventions can alter the frequency of positive social behaviors emitted by seriously disturbed and autistic children. However, it would be unreasonable to expect peer-mediated initiations to be equally effective with every child. It seems likely that a child's entry level behavior repertoire may inhibit or enhance the effects of intervention. Although sufficient research into the precise nature and function of mediating subject variables has yet to be done, it seems important to note them nonetheless.

Several studies using the social initiation treatment have found a direct relationship between initial baseline performance and the effectiveness of treatment (Strain, 1977; Strain et al., 1977). Specifically, withdrawn children who displayed lower baseline levels of positive social behavior were less responsive to treatment than youngsters with a relatively higher baseline performance. However, when the social initiation treatment was applied to children who engaged in a high level of self-stimulatory activity, no relationship was noted between subjects' initial baseline performance and treatment outcomes (e.g., Ragland et al., 1978; Strain, Kerr, and Ragland, 1979). One possible explanation for these divergent findings is that self-stimulatory behavior may compete with or mask an existing social repertoire.

Other components of a child's nonsocial repertoire may also affect the degree of behavior change associated with peer social initiations. For example, Guralnick (1976) has suggested that imitative skills represent a critical prerequisite for successful peer-mediated treatment. Also a number of investigators have indicated that appropriate toy and material use can impact significantly on intervention effectiveness (Allen, Turner, and Everett, 1970; Apolloni and Cooke, 1978).

ASSESSMENT AND TREATMENT EVALUATION

In the majority of intervention research, rate or frequency of global interaction categories has been used to identify withdrawn children and monitor the effects of treatment. Typical categories of interaction include "positive motor-gestural," "positive vocal-verbal," and "positive social behavior." While it is true that global response categories have proven to be sensitive to treatment effects, they provide little information for on-line personnel regarding what to teach.

Recently, a number of attempts have been made to specify those positive social behaviors of preschool-age children that set the occasion for reciprocal social interaction. Tremblay, Strain, Hendrickson, and Shores (in press) studied the social interactions of 61 preschool children over a 2-month period observing each child for a total of 60 minutes. Using a 14-category system of observation, these authors report that the following social initiations were followed more than 50 percent of the time by a positive response from an interacting peer: (a) Rough and Tumble Play, (b) Share, (c) Play Organizer (e.g., "Let's play ball"), (d) Physical Assistance, (e) Affection, and (f) Question.

These same authors also conducted a follow-up observational study on the ten highest and lowest level interactors among the original group of 61 children (Tremblay, Strain, Hendrickson, and Shores, 1979). The primary aim of this study was to provide a thorough assessment of the behaviors engaged in by preschool children following positive social initiations. Once again, a total of 60 minutes of data were collected for each child. The results indicated that the overwhelming majority of responses to initiations was composed of two categories of activity. The first category was described as "responding in kind." That is, if a child received a Share initiation, it was quite likely that he or she would reciprocate with a Share behavior. The other frequently occurring response category was described as "Compliance." For example, if a youngster initiated a Play Organizer such as, "Let's play trucks," the peer might well say, "Okay," and proceed to collect several trucks.

The results from these two observational studies have been employed in recent treatment studies as both target behaviors for severely handicapped children and as components of a social initiation intervention. Data from these efforts indicate that social initiations such as Play Organizer, Share, Rough and Tumble Play, and Physical Assistance can set the occasion for positive social behavior by withdrawn preschool-age children (Hendrickson, Strain, Tremblay, and Shores, 1979). Moreover, generalization data on several of the youngsters show across-setting and across-time treatment gains when the aforementioned social initiations were used by nonhandicapped children as approach behaviors.

Whereas some data are now available to empirically select treatment targets and intervention procedures, only anecdotal reports now address the critical treatment evaluation issue of intervention effects on peer trainers. This issue is certainly brought into focus when target children may engage in negative, possibly threatening behavior toward peer trainers. In one study, Ragland et al. (1978) have indicated that their peer trainer was reported by his teachers to engage in improved classroom and bus riding behavior during the course of the study.

Although there is no clear evidence on which to judge the positive or negative effects of social behavior interventions on peer trainers, a wealth of information points to the benefits that accrue to peers who function as academic tutors (Allen, 1976). It appears that both same-age and cross-age instructional programs result in academic gains for tutors that closely match those demonstrated by tutees. In the area of social behavior training, it would seem appropriate to monitor both the social behavior and social status of peer trainers. Also, the self-evaluations of peer trainers could well provide a valuable data source for the total evaluation of peer-mediated interventions.

MAINTENANCE AND GENERALIZATION OF BEHAVIOR CHANGE

The maintenance of social behavior change across time and the generalization of effects to new social partners, play objects, and settings have been most difficult to achieve. With the exception of findings by Timm et al. (1979), it would appear that the peer-mediated social initiation treatment is more likely to result in behavior maintenance and generalization than adult-mediated treatment. Yet, it is doubtful that the positive social behavior exhibited during follow-up or in generalization settings represents a clinically acceptable level of interaction. A number of environmental and treatment-related variables seem important to understanding the minimal maintenance and generalization demonstrated by severely handicapped and autistic children.

First, the social environments in which maintenance and generalization have been assessed did not provide socially responsive partners. Most often, the severely handicapped and autistic children were returned to nonintegrated settings with peers who could be expected to ignore, overtly punish, and quickly extinguish any positive overtures by treated children. Not only is this situation a severe test of maintenance and generalization, but it may also be an inappropriate assessment technique. However, the mere integration of socially competent children with isolate youngsters will not automatically result in any post-treatment behavior change. A considerable body of research has established that in settings where socially withdrawn and socially competent children are integrated, the socially skilled children do not interact with less-skilled peers (Porter, Ramsey, Tremblay, Iacobbo, and Crawley, 1978; Ray, 1974; Strain, 11977). Even when socially competent children have participated in the training of withdrawn classmates, they tend not to interact with these youngsters when socially skilled children are available in the setting (Peck, Apolloni, Cooke, and Cooke, 1976). Strain and Fox (in press) have noted that the isolation of handicapped children in integrated settings is not necessarily the result of overt rejection but more often represents a choice made by nonhandicapped children to interact with established friends. Thus, it may be necessary to alter the entire social ecology and friendship network in a classroom if maintenance and generalization of treatment gains are to obtain.

The lack of maintenance and generalization may also be attributed in part to the limited range of social behaviors targeted for change with severely handicapped and autistic children. Intervention efforts have been limited to: (a) increasing children's responsiveness to social initiations; (b) increasing various motor and verbal responses relevant to cooperative play; and (c) setting the occasion for imitation of positive social behaviors. A recent review of social skills training (Van Hasselt, Herson, Whitehill, and Bellack, 1979) indicates that isolate children will likely not exhibit long-term behavior change without systematic training of multiple social skills. Those observational studies by Tremblay and her colleagues (Tremblay, Strain, Hendrickson, and Shores, in press) have provided some initial information on critical social behaviors by preschool-age children. With elementary-age youngsters, Reardon, Hersen, Bellack, and Foley (1978) have identified six social skills that characterize the behaviors of highly competent versus less competent children: (a) shorter latency to respond to social initiations; (b) use of more lengthy utterances; (c) display of more appropriate affect; (d) more spontaneous social initiations to social partners; (e) more lengthy responses to social initiations; and (f) more requests for information from social partners. Obviously, those social skills identified by observational research represent a significant programming challenge. Considerable task analyses must precede the incorporation of multiple social skills into intervention efforts.

CONCLUSION AND RECOMMENDATIONS

Whereas preceding sections of this paper offer a rather straightforward report of research findings, this section represents a more personal and speculative assessment of social interaction programming for severely handicapped and autistic children. Many of the following comments may well become outdated as our information base rapidly expands.

1. Social withdrawal represents a pattern of behavior that sets the occasion for immediate and long-term negative consequences. Withdrawn children are particularly handicapped in acquiring language, social, and some cognitive skills. Moreover, social withdrawal in the early childhood years may result in minimal social adjustment during adolescence and adulthood. In fact, the single most powerful predictor of adult mental health problems is childhood social withdrawal.

2. Compared to other areas of instructional programming for severely handicapped and autistic children, minimal research and development have been conducted on social interaction. Currently, there are no validated

instructional programs available to classroom teachers. At best, there are scattered research reports that typically do not describe day-to-day instructional procedures in the detail necessary for widespread replication. Moreover, while few would argue the internal validity of these reports, the demonstration of positive behavior change has involved very few children. One research program is now funded by the U. S. Office of Special Education to develop such an instructional program with severely handicapped children (SCIP Year End Report, 1979).

3. Prompting and reinforcement mediated by adults is a proven intervention package with severely handicapped and autistic children. With target children who demonstrate some positive behaviors prior to intervention, a "spillover" of treatment effect on nonreinforced youngsters may be observed. Also, current information indicates that there are no negative side effects on children in the setting who do not receive such intervention. Finally, when the adult-mediated treatment has been applied to children who exhibit negative responses to peers, these behaviors have been treated effectively by prompting and reinforcing positive and incompatible social behaviors.

4. There appears to be a direct relationship between the degree of social withdrawal and the effectiveness of the adult-mediated prompting and reinforcement treatment. Children who display no positive responses during baseline assessment may require more elaborate (e.g., direct shaping) intervention procedures. However, it must be emphasized that a technology to predict which children will or will not be good candidates for any social behavior treatment is nonexistent.

5. In only one study (Timm et al., 1979) has the adult-mediated intervention package resulted in a maintenance of effects under conditions of minimal teacher involvement. In this study a response-dependent fading procedure was used to systematically reduce the level of intervention.

6. In addition to the lack of generalization associated with adult-mediated prompting and reinforcement, several other factors also limit the efficacy of this treatment approach. For example, conditional probability analyses of the Strain and Timm (1974) and Strain, Cooke, and Apolloni (1976) data indicate that the immediate temporal consequence of reinforcement delivery was a termination of child-child interaction. Also, in settings where teachers are responsible for the social behavior training of several withdrawn children, the logistical feasibility of adult-mediated intervention is severely limited.

7. In the area of peer-mediated treatment, the social initiation intervention has been used successfully with preschool and school-age children described as severely handicapped and autistic.

8. Compared to adult-mediated treatment, the peer social initiation approach has been associated with an equal amount of immediate behavior change and better maintenance and generalization of effects.

9. No clear data are available by which to judge the effects of the social initiation treatment on peer trainers. In future research efforts there is a critical need to thoroughly assess both trainer and trainee behavior. It should be recalled, however, that anecdotal reports from social interventions and data from academic research clearly point to positive outcomes for trainers.

10. Relatively little information is now available upon which to empirically select target behaviors for intervention efforts. While some recent observational studies have been designed to identify functional social skills, the question of what to teach is far from being answered. This situation is particularly problematic when elementary-age children are identified for treatment.

11. The marginal maintenance and generalization of treatment effects may, in part, be attributed to the socially unresponsive, nonintegrated educational settings in

which severely handicapped and autistic children are often enrolled. Other factors which may also contribute to the lack of maintenance and generalization include: (a) a high rate of self-stimulatory behavior; (b) poor toy use skills; and (c) a priori selection of treatment targets.

12. The adult and peer mediated interventions have been empirically demonstrated to be effective with children ranging from three to twelve years of age, and from mildly to severely handicapped, and who represent the following diagnostic labels and categories of exceptionality; mentally retarded, emotionally disturbed, autistic, multiply handicapped, and learning disabled. Not only have these procedures been employed successfully with a wide variety of children, but the patterns and magnitude of behavior change have been quite comparable across handicapping conditions and degrees of severity. What has distinguished children who have demonstrated a transient increase in negative behaviors during peer interventions is a high rate of self-stimulatory behavior.

13. Finally, great progress has been made in the treatment of social withdrawal in the last decade. Continued research and development can only result in more adaptive and pleasurable social experiences for severely handicapped and autistic children.

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THE TEACHER'S PERSPECTIVE:
THE STRUGGLE TO PROVIDE QUALITY EDUCATION TO AUTISTIC CHILDREN

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Educators who teach autistic children in the public schools are in a quandary. During the past decade, program authorities have generally recommended that the most appropriate curricula for autistic students involve the teaching of matching, sorting, discrimination of common objects, and total communication --conducted primarily within a one-to-one discrete trial format. On the basis of this view, teachers have collected a great deal of data to evaluate the effectiveness of these methods. Now, however, programmatic leadership in the field is beginning to assert that the instructional content advocated over the past ten years may be neither functional nor appropriate to the needs of autistic children and, indeed, may present obstacles to generalization of skills. This has prompted considerable self-questioning among teachers who had followed the earlier recommendations. While more comprehensive and functional curricula may be beginning to emerge, educators of autistic and other severely handicapped populations still face a serious set of problems.

This paper will first outline the special education considerations that are particularly germaine to the behavioral characteristics of autistic children and youth. Then, with those considerations in mind, the authors will present three major issues concerning the current state of knowledge in public school programming. We will discuss the variables concerning each issue and will offer possible solutions and future research considerations. These issues concern: (a) the setting where the educational process should most appropriately take place, (b) the curriculum content appropriate for autistic children, (c) administration of these programs, and (d) what public school teachers should reasonably be expected to accomplish regarding educational programming.

CHARACTERISTICS REQUIRING INNOVATIVE EDUCATIONAL STRATEGIES

The autistic child brings to the classroom a unique set of behavioral characteristics that are often difficult for teachers to comprehend. There is such a wide range of skill development and intellectual functioning within this population that it is impossible to provide a general "program" to meet their individual needs. The children exhibit severe language deficits, uneven skill development, extreme behavior problems and other disabilities in learning and relating to others. Any of these may occur in various combinations and degrees not only in individual children but within the classroom population. Programming for such diverse needs is complicated, yet many innovative teachers have accomplished it.

Disruptive behaviors such as tantrumming, aggressive acts, and occasionally, self-abusive behavior, create major problems in the classroom, interrupting the education of the disruptive child as well as those around him. These problems must be promptly and effectively eliminated in order to maintain a positive learning environment and to engender staff cooperation. Understanding and identifying the variables that may be controlling disruptive behavior, while not easy, are critical in designing programs that will alter these behaviors and allow development of functional skills. Teachers attempt to arrange the environment so that reinforcement is contingent on engaging in adaptive tasks that are incompatible with disruptive behaviors. Typically, autistic children are unresponsive to normal social contingencies or reinforcers available in the classroom (Dunlap, Koegel, and Egel, 1979). Thus finding reinforcers that provide incentives for the children is an endless task.

Self-stimulation, another common behavior characteristic, takes many forms in severely handicapped populations, e.g., finger flicking, rocking. It is not a problem unique to autism, yet its persistence and incompatibility with adaptive learning is more marked in these children than in those with other disabilities (Koegel and Covert, 1972). Self-stimulation interferes with learning new skills and must be controlled before adaptive behaviors can be learned. Even if the teacher's intervention is partially effective, the interfering behavior will most likely recur, although less frequently. Thus, intervention becomes an ongoing process throughout the child's education.

Stimulus overselectivity is a behavioral phenomena, identified in autistic and severely retarded children (Lovaas, Schreibman, Koegel, and Rehm, 1971). It refers to the limited ability to attend to more than one feature of a stimulus complex. This restricted ability is more apparent in low-functioning children and interferes with normal learning. Some researchers have speculated that stimulus overselectivity is responsible for many of the autistic child's behavioral characteristics. These include: interference with the development of social behaviors (Kutter, 1978), inability to generalize (Rincover and Koegel, 1975) and inability to benefit from observational learning (Varni, 1979). It has also been suggested that severe language deficits may be related to the limited ability of an autistic child to respond to environmental input (Lovaas, et al., 1971). Methods have been developed to deal with this problem by reducing the irrelevant features in a task and enhancing the critical elements (Etzel and LeBlanc, 1979; Schreibman, 1975). Teachers must be very familiar with these methods before they can use them effectively. It is often time consuming to use them and there is no guarantee that the child will learn to respond to relevant features within a given stimulus dimension, nor that the learned performance will generalize.

The autistic child's inability to generalize and maintain educational gains is one of the main dilemmas faced by teachers and parents. Gains made in one setting seldom transfer directly to different environments (Lovaas, 1973). The practical implications of such problems are apparent as teachers and parents daily encounter discrepencies in a child's performance at school and at home. Identification of variables affecting lack of generalization have led researchers to look at the role of stimulus overselectivity and the narrow limits that it may place on a child's ability to perceive similarities or differences between environments and teachers (Rincover and Koegel, 1977). Recent research has suggested stimulus control methods and response generalization strategies to facilitate generalization in working with autistic children, as shown in the chapter by Carr (1980).

APPROPRIATE PROGRAMS AND EDUCATIONAL SETTINGS

Autistic children fail to learn when placed in large groups taught with traditional trial and error methods. Uneven skill development and idiosyncratic learning patterns pose a unique challenge. They are a less homogeneous group than those trainable mentally retarded students observed by the authors in most school settings. All handicapped children require individual educational plans, but severely handicapped children, including those with autism, require even more specialized programming. Teachers design specific strategies for each child, e.g., intra-stimulus prompts, varying the inter-trial interval (Dunlap and Koegel, 1980), changing the reinforcement schedule. In order to make data-based program decisions, the teacher must develop an objective evaluation system. Data on progress in learning adaptive behavior, as well as on the occurrence of specific problems (e.g., self-abuse, stereotypic behaviors, aggression), help the teacher identify which of multiple possible variables might be influencing the child's behavior and learning. The child's needs, as they are indicated by these variables, will help parents and teachers decide on appropriate educational settings. However, wherever this setting may be, it must be highly structured and must allow for specialized programming. The importance of providing a well-structured environment to enhance learning and reduce the disruptive behaviors of autistic children is well established (Bartak, 1978; Schopler, 1971).

Clinical Research Setting vs. Public School Setting

The unique needs of autistic children raise the question of whether it is possible successfully to transfer techniques and methods that have been researched solely in clinical settings to a public school classroom. Staffing patterns in public school programs for autistic children provide about one adult per two to three children, while laboratory classrooms often have a one-to-one teacher-student ratio. Often such clinical settings have far more funds for equipment and instructional materials than are available to public school classrooms. Programs run by research institutes have far greater access to consultants and support services than do public school programs. All of these considerations suggest that a great deal more applied research in public schools is needed to determine practical and effective methods for public school classrooms.

Integration Issues

Public Law 94-142 requires that handicapped students be educated in the same building and use the same facilities as their nonhandicapped peers, wherever possible. The spirit of the law appears to be that handicapped students can benefit from contact with their nonhandicapped peers, as opposed to total isolation in classrooms for students with similar needs and skill levels. Although there is considerable social support for integrating autistic children, objective evidence has yet to verify that any benefits accrue from such an experience. Since most autistic students do not benefit from incidental learning, there is still further doubt about the validity of such an approach. If autistic children are to make social gains through contact or education in an integrated setting, the question of exactly how to implement integration arises. Are peer tutors the most effective starting point, or should the autistic child be placed in a regular classroom through a graduated time increase method? What grade classroom would provide an optimally successful environment? What special training would general education teachers need to integrate autistic children in their classrooms? Research on other handicapped populations suggests ways in which children have been effectively integrated (Voeltz, 1980), but a systematic method to execute this process for the autistic population has yet to be developed. At best, decisions concerning integration are arbitrary. An empirically derived framework explicating a continuum of integration procedures is a major need.

CURRICULUM CONCERNS

Early in the development of public school programs for autistic children, many classroom teachers had doubts about the arbitrary skills that they were urged to teach. Indeed, it is increasingly clear that there is little empirical basis for deciding what should be taught. It is becoming apparent that teachers should emphasize skills that will be functional in the least restrictive, non-institutional environment.

If this line of reasoning is followed, educators must find innovative ways to assess needs and new ways to decide where children should be placed for optimal educational benefits. Before settling on a published curriculum, one might determine what skills each student needs at home, in possible regular class settings, and in local recreational facilities (as well as any other settings in which he or she will actively participate). Having assessed the environment, a curriculum might be developed, or chosen, that is suited to each child's functioning level and learning styles, and to the environmental requirements. It remains questionable whether many adaptive skills can most adequately be taught in a classroom as we now define it. The definition of a classroom may need to be broadened to facilitate the learning of adaptive, generalizeable behaviors. However, though a teacher may have adequately assessed suitable goals for the ultimate good of the student, he or she does not have the authority to make such "revolutionary" changes concerning the parameters of educational environments as taking the classroom out of the school building. For this reason, the administrative role in educating autistic youngsters will be given considerable attention here.

ADMINISTRATIVE ISSUES IN EDUCATING AUTISTIC CHILDREN

Administrative Flexibility

> (Many of the concerns addressed in this section are based on the author's experiences and interviews with teachers of autistic children throughout the country.)

What are the administrative implications of a functional orientation to assessment and curricula? Most school administrators believe it is their task to assure that teachers work eight hours a day during a specified time, and that students attend school during the appointed student-contact hours. Average daily attendance should be high, and teacher time away from the school should be minimal. These requirements may be incompatable with a functional approach to educating students. Teachers who attempt to extend the child's educational experience to home or community settings often work many hours outside their regular school day. Moreover, a teacher must examine available community facilities in order to know what environmental demands are placed on the child. The out-of-school time needed to accomplish this currently is not an official part of most teachers' jobs. Administrative flexibility is essential for arranging student and teacher schedules to accommodate teaching in the natural environment at appropriate times.

The simulated classroom has been offered by administrators as one solution. However, for children who have great difficulty generalizing functional skills, a simulated classroom may hinder rather than facilitate progress. Taking children to the grocery store and actually experiencing the shopping process, or joining the family for dinner to teach mealtime behaviors, provides a more direct approach to building and maintaining such skills. In order to teach children in the environment where the behaviors naturally occur, adequate staff must be available both to accompany children on outings, and to implement programs with students in the classroom. Recognition of the need for, and provision of staff, is an administrative responsibility. Administrators must be concerned with how to count staff and students as being present when they are out of the school building, or how to supervise and monitor a teacher who is shopping with a child at the local supermarket, and may be reluctant to recognize that teaching may not best occur during traditionally designated school hours. As a result, many kinds of innovative, and probably effective teaching practices do not occur, and needs of children may not be adequately met.

Ethical Issues and Administrative Guidance

Classroom teachers are asking themselves whether some behavioral interventions developed in clinical settings have an appropriate place in the public schools. Is it possible or appropriate to replicate, in school settings, behavioral interventions which have only been found effective under strictly controlled experimental conditions? Are public school programs expected to carry out aversive or other intrusive strategies? Where is the line drawn with regard to the use of such techniques in education? The present trend is to resolve questions regarding the less intrusive techniques at an IEP staffing, but both the ethical and legal aspects of using highly intrusive or aversive procedures remain unresolved. Another major ethical dilemma concerns how the severe behavior problems of one child may be infringing upon another's right to education. Generally, teachers must make these decisions with little administrative direction. In addition to provision of professional guidelines, administrators might support teachers by providing crisis rooms, making extra staff available to assist with a particularly difficult student, and by promoting tolerance within the school for some disruptive behavior in the early stages of behavior management techniques. These supports are often difficult to secure since most administrators know little about autistic children.

Administrative Issues Concerning Integration

Integration, as now envisioned, makes unrealistic demands on the special education teacher. In addition to daily classroom responsibilities, teachers are expected to train the peer-tutor or regular educator who will be working with the child. After designing a program, the teacher must accompany the child to the new classroom and regularly monitor progress during the transition. Additional staff members are essential to assure the effectiveness of integration, yet are seldom provided by the administration. Since the staff-student ratio is already higher in classrooms for severely handicapped children than it is in others, it is difficult to convince administrators that another staff person is needed.

Building and central office administrators greatly affect programs for handicapped children, both through their formal policies and through more informally expressed attitudes. Out of administrative convenience, decisions are often made to house programs for severely handicapped students separately from nonhandicapped children, with no provision for support to teachers when a child is ready for integration.

EXPECTANCIES, COMPETENCIES AND BURNOUT

Probably the teacher is the most essential component of a program or classroom for autistic children. An individual who is innovative and resourceful, who communicates well, and who recognizes the specific learning patterns and needs of the child, can develop a successful, workable program in spite of many obstacles that may seem insurmountable. To carry out the daily functions of teaching, which include a variety of responsibilities other than student contact, teachers must have a wide range of competencies. Sometimes, however, realistic teacher competencies are incompatible with the unrealistic expectations of others.

An overwhelming set of expectations surface when one analyses the various roles assumed by teachers of severely handicapped students. The most obvious role is that of instructor, which requires knowledge of teaching strategies for the specific disability area, curriculum materials, data-collection, and evaluation procedures. Since assessment in the field of autism is in its infancy, the teacher also must assume the role of psychologist, seeking out and administering assessments, and developing realistic expectations for a child based on these assessments and on knowledge of child development. The teacher must develop skills as an applied behavior analyst, to interpret accurately behavioral data and make decisions about the direction of a child's program. Teachers are compelled to become their own interpreters of the latest research, translating data gathered in controlled clinical settings, and applying these techniques to the relatively uncontrolled classroom. Since there are no established curricula for autistic students, teachers are expected to become expert in developing and assessing curricula, which is no small feat in itself. To increase the benefits a child may receive from the various therapies in which he is involved, teachers take on roles as surrogate therapists, implementing procudures suggested by the therapist(s) with whom the child is working (e.g., communication therapy, occupational therapy, physical therapy). The teacher often must function as social worker in an effort to carry out the essential parent program. Lastly, the teacher becomes a consultant to those mainstream educators who may have autistic children in their classrooms, and this implies that some understanding of the regular education process is needed. Is it realistic to expect that one individual can become competent in all these areas, or carry out all the responsibilities implicit in assuming these roles? The task is insurmountable.

Teachers generally enter their field enthusiastically and are willing to work hard. This attitude may soon be dampened by the demands of a job that requires teachers to display skills that they never learned, and to make available time that does not exist. Much as children's functional behavior wanes when it goes unreinforced, so do the efforts of teachers diminish. Administrators need to recognize this fact and provide supportive services that assume some of these responsibilities and help maintain teachers' enthusiasm. Creating such positions as parent-trainer or program consultant can allow teachers to focus most on the direct educational needs of the child, which in itself is a full-time job.

How does a teacher develop the skill repertoire necessary to educate autistic children? Since there are few teacher training programs designed to prepare teachers for educating autistic students, most teachers learn on the job. To date, a well-defined set of competencies for teachers of autistic children, agreed upon by teacher-trainers and supported by data, is unavailable. Most teachers who are licensed to educate autistic students complete university programs in educating the emotionally disturbed or mentally retarded. While there is some similarity in the needs of these groups, pertinent information about autism is not provided. Extensive inservice training and consultation are essential to keep teachers abreast of the continuously developing and changing strategies of teaching this population. In reality, funds meant for such purposes are seldom channeled in this direction. Teachers suffer; children's educations suffer.

The Problem of Burnout Recapitulated, with Possible Remedies

Educating autistic children demands unrelenting teacher energy. Several factors contribute to the all too common "burnout" of teachers. Overwhelming job responsibility, with little reinforcement, is certainly a primary problem. Gaps in staff available to assume some of the roles outside direct service to children also contribute. Inadequate preparation by teacher training programs, paired with the unavailability of consultative resources, causes teachers to tire quickly as they attempt to find their own solutions to seemingly unsolvable problems. There are not enough positive support systems for encouraging and enhancing the self-confidence of teachers. Every parent of an autistic child can attest to the feelings of inadequacy, if not despair, that they experience in teaching their youngsters. Teachers are not different. As parents desparately need support, so do teachers.

The contingencies that control administrators' behavior are not necessarily related to the progress of a child in school, or to the effectiveness with which a teacher does the job. Generally, administrators are reinforced for staying within the budget and avoiding litigation. Reinforcement, and more often punishment contingencies imposed on special education administrators by school boards and superintendents, place administrators and teachers in an adversarial rather than cooperative relationship. Teachers attempt to implement the most appropriate educational procedures for each child, and administrators tell them to avoid unorthodox programs and to cut costs. The vicious circle must be broken if the students are to receive the kinds of educational programs that are required, and the problem of teacher burnout is to be dealt with. Administrators alone may not be able to effect positive solutions. Boards of education and superintendents are answerable to the communities they serve. These elected officials, through community involvement, can be encouraged to authorize special education administrators to begin developing support mechanisms for teachers of autistic children. In the absence of this kind of support from school boards and superintendents, it is unlikely that administrators will be able to reverse the exodus of bright teachers from the field of education for autistic and other severely handicapped students.

Some administrators have made significant efforts to prevent teacher burnout. Even such small efforts as provision of daily breaks and designation of adequate preparation time, have positive effects on teacher morale. A rotation procedure for periodic job changes can reduce the pressure a teacher experiences in working in intensive direct contact with students. For example, the program's parent-trainer or school liaison teacher may exchange jobs with the classroom teacher quarterly or every six months; thus, new vitality is brought into the classroom on a regular basis, and the classroom teacher is in a less intensive work environment. A consultant can serve as a source of intellectual stimulation and may recharge a worn-down teacher by providing useful and enlightening information. Sharing time with teachers from other programs can also produce some of the same results. Adequate staff would obviously aid the teacher and reduce a high anxiety level created by the need to perform an unrealistically wide variety of functions. Perhaps one of the most significant ways to address the issue of burnout lies in administrators' taking the time to communicate concern and confidence to teachers about their ability to do the job. This type of support provides incentives for teachers to improve their competency in the field, and creates an atmosphere of mutual respect. However, in the last analysis, good administrative words that are not followed up by effective administrative deeds ring hollow in the ears of weary teachers.

SUMMARY AND CONCLUSIONS

The state of the art in educating autistic children is still in the formative stages. Although significant gains have been made in the past ten years, mandating that public schools educate autistic children, the question of what to teach is still unanswered. Teacher training programs have not been widely developed to train professionals to work with autistic students, yet teachers are expected to develop and implement education plans for each student. Administrative variables largely dictate the state of the programs and significant efforts will be necessary to acquaint administrators of the specific needs for providing quality services. Further research in practically all areas of autism is warranted, with a heavy emphasis on curricula, effective teaching and intervention strategies for public school use, and developing preventive measures for teacher burnout. Although teachers are generally optimistic and willing to work hard, they encourage the efforts of researchers, teacher trainers, administrators, parents and other interested persons in providing future directions to assure quality education for autistic students. Teachers and parents alike need the support of the entire educational system to aid them in educating the children for whom they share responsibility.

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BEHAVIORAL TEACHING WITH YOUNG AUTISTIC CHILDREN

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The purpose of this chapter is to describe procedures and to provide a preliminary follow-up report on a longitudinal early intervention project for autistic children conducted at the University of California, Los Angeles. The project, which began in 1972 with a grant from the National Institute of Mental Health (MH 11440), served autistic children referred at less than 40 months of age (or less than 46 months if echolalic speech was present). Two treatment groups were studied: an intensive treatment group received more than 40 hours of structured intervention per week, while a minimum treatment group received 10 hours or less of weekly intervention. A child was assigned to the intensive treatment group if there were staff available to provide the intensive treatment. Similarly, s/he was assigned to the minimal treatment group if staff were not available at the time parents made initial contact with the project. At the onset of treatment, the two groups were matched for mental age, chronological age, and a number of behavioral indices, such as amount of self-stimulation, amount of appropriate play, and so on. There were 18 children in each group.

The project was based on the assumption that autistic children may have a more favorable prognosis if treated at an early age than would be the case if treatment were delayed past early childhood. This thinking emerged from our earlier work which had not directly manipulated age at onset of intervention. Between 1964 and 1972, we had worked with 20 autistic children ranging in age from 3 to 14 years. The two youngest children in that group did noticeably better than the others. It was easier to teach them, they learned more quickly, and it was easier to fit them into the normal community (Lovaas, Koegel, Simmons, and Long, 1973).

There are several explanations as to why young autistic children may do better in treatment than older autistic children. First of all, it is much easier to place a young child in a normal school setting, because it is in the early years that handicapped children are most similar to their nonhandicapped peers. In a regular preschool setting, autistic behaviors do not stand out so dramatically as they do in the context of the elementary school classroom. An autistic child among second and third graders is quite noticeable and, therefore, more difficult to integrate. Conversely, the mainstreaming of young autistic children into regular school can usually be accomplished with relative ease. At this point in their lives, it appears that integration with nonhandicapped peers may produce the greatest gains. For an autistic child to become normal, s/he has to communicate and play with normal children, and these children will teach each other what adults cannot teach them.

A second reason why younger autistic children may be easier to teach than those who are older is related to their capacity to generalize much more widely. If a young child learns something in one situation, s/he is more likely to evidence that behavior in new situations. On the other hand, the performance of older autistic children is characterized by a great deal of discrimination. Apparently, the older children have had more experience and can, therefore, recognize differences between training situations and natural environments more readily. In a sense, the younger children are not that "smart."

A third possible reason for our relative success with younger autistic children relates to the vulnerability of the young child in general. Young children are much more "accessible" and "open" to various reinforcers. For example it was easier for us to find affectionate interactions that could be reinforcing to our younger subjects who, similarly, were much more responsive to our statements of disapproval. A kiss or a hug seem to mean more for younger children, as do expressions of disapproval, such as a loud "No!". Older autistic children were typically less affected by the reinforcing consequences available to their teachers.

These various explanations, based as they are on common sense, probably all contributed to our relatively greater impact on younger children. The remainder of this chapter briefly describes the basic components of the early intervention program initiated in 1972.

DIAGNOSIS AND STUDENT SELECTION

The way we recruited the children we are now treating is of interest. A surprising observation was that children were not referred to the program from the professional community. Although we sent several hundred letters to pediatricians in the Los Angeles area, there was not a single referral from that group. One would have expected the medical community to have referred children to a UCLA program inasmuch as the university is well known and respected and the treatment offered was extensive and free of charge. In retrospect, it is clear that pediatricians are inadequately informed about autism and, consequently, may all too frequently give incorrect advice to the parents of autistic children. "Don't worry; he'll grow out of it" is hardly good counsel to parents whose children will need extensive long-term programming. One of the most important tasks, then, is to inform pediatricians more adequately, since they are in a primary position to identify and refer such problems to appropriate early intervention.

Unsuccessful in using traditional channels, we turned our recruitment efforts to the local newspapers, soliciting a series of newspaper interviews in which we described the program and the nature of the target population. Within a few days after each article appeared, several children would be referred directly from the community. Either the parents themselves read about the project, or neighbors and teachers brought it to their attention.

Once parents had contacted the project, each child thus referred was diagnosed to determine that s/he was in fact autistic. The procedure is relatively uncomplicated and, for our purposes, quite sufficient. Essentially, we interview the mother and father for about an hour in the presence of the child. The diagnostic decision is derived from both the developmental history and direct observation, and is basad primarily on the presence or absence of certain behaviors that are easily identified. For example, when a mother is asked to identify the primary problem with which she wants help, she will usually relate these problems to language. She will say that her child's expressive and receptive language is quite deficient (in her terminology, "He doesn't talk very well, and he doesn't seem to understand a great deal, either.").

Six major behavioral deficiencies are used by the project to characterize autism: (a) little or no language, either expressive or receptive; (b) minimal or no appropriate toy play; (c) minimal or no play with peers; (d) little or no affective attachment to parents or other significant people; (e) apparent sensory deficits (the child may appear to be blind or deaf, may have a raised pain threshold, or may show limited or no startle response); and (f) few if any self-help skills such as toileting, dressing, self-feeding, and so on. In addition to these six deficits, we examine two general classes of behavioral excesses: (a) tantrums and aggressive behavior, either directed toward self in the form of self-injury or directed toward parents and teachers, as in biting, scratching, kicking, and so on; and (b) ritualistic, repetitive, stereotyped behavior in such forms as rocking, spinning objects, gazing at lights, and other self-stimulatory behavior. Besides these behavioral deficiencies and excesses, diagnostic criteria included three or four more normal behaviors which can be identified as "splinter skills," or what earlier professionals have referred to as "islets of intact intellectual functioning." These include: (a) normal motor development, represented by normal milestones for sitting up, crawling, and walking (most children whom we call autistic evidence fairly good motor coordination); (b) good auditory or visual memory (as evidenced by delayed echolalia, insisting on "sameness" in routine, etc.); and (c) certain "special skills," such as a fondness for music, an interest in mechanical objects, or very elaborate and clever forms of self-stimulation. Identifiable early in life, these characteristics are usually apparent to the family within the first two years.

A common question concerns how these autistic children may be different from other children with retarded development. Obviously, there is a great deal of overlap. Although there is a wide range of behaviors and individual children display different constellations of these behaviors, mentally retarded children display a fairly uniform set of behavioral deficiencies and behavioral excesses. To label the child as autistic, it is first important that one or more of the normal behaviors be present. For example, a child would not be primarily autistic if s/he did not walk by age two. Moreover, the absence of affective attachment to parents and the presence of seeming sensory deficits are more important and apparent in autism than in other severe handicaps. These diagnostic criteria resemble those of Ritvo and Freeman (1978), Rutter (1978), and Wing (1978).

As a further measure, the project's diagnosis of autism is subjected to confirmation by another agency. Considerable disagreement prevails as to what exactly qualifies for a diagnosis of autism. There are even those who reject the utility of such diagnosis since the etiology of the problem remains unknown. It is also true that children diagnosed as autistic do not show a very uniform response to educational interventions or other treatment. What matters is whether or not a child progresses, not whether the diagnosis is precise. A great many parents have spent a great deal of money trying to get an adequate diagnosis of their children, only to find that diagnoses differ across institutions and agencies and that their investment has been wasted. There are programs that charge a family some $10,000 per month for a three-month "diagnostic work-up." Such efforts are wastefully unnecessary if the parent has reported that the child does not speak like other children or does not understand spoken language, does not play with toys or with friends, and spends a great deal of time in ritualistic, self-stimulatory behavior. In this event, it is clear that a great deal of intervention is needed and that the task at hand is treating and educating, rather than prolonged diagnosing. Finally, the manner in which we treat or teach an autistic child is virtually identical to the way we proceed with any child who shows gross behavioral deficiencies, whether s/he be labeled autistic, brain-damanged, aphasic, retarded, or otherwise handicapped.

ORGANIZATION OF THE TEACHING PROGRAM

After the diagnostic interview, the family comes in for the first treatment or teaching session. The child and his parents, the student volunteers, and a senior therapist-teacher all meet together. Each of the volunteers will work five or more hours per week with the child. Approximately ten student volunteers work with each child in the intensive treatment group, while one or two students are available for each child in the less intensive treatment group. There are two primary goals: first, to provide the child as much education as possible, hence the large number of people; second, to establish the mother as the primary therapist or teacher so that she can take over the teaching and treatment within one or two years.

If the mother learns to become the primary teacher or therapist for the child, she can train other people to work with her child, to select the appropriate schools, and generally to provide for the kind of continuity in treatment that these children need so much. The mother continues year after year, while student volunteers and other personnel may come and go. It is crucial that the mother learn to train other people to work with her child; otherwise, she may "burn out" and become discouraged because no one can do all the work required by the autistic child. Such involvement may necessitate that the mother temporarily interrupt outside employment (for example, that she ask for a leave of absence for one year) and, in a sense, commit herself full-time to teaching and treatment in order to learn the requisite skills.

All student volunteers (who come from a variety of academic disciplines) have had a course in behavior modification. In general, however, they do not know a great deal more than the parents. Most of the students begin training in much the same level as the parents, but the volunteers usually work for only about six to eight months at a time.

It is essential to begin instruction with a simple curriculum, thus enabling the child to learn basic skills while parents and volunteers are learning basic teaching techniques. A simple curriculum allows any adult to become a teacher and every child, no matter how retarded, to become a successful student. The essence of the curriculum, summarized below, is from Lovaas, Firestone, Ackerman, Alexander, Perkins, and Young (in press).

When a number of students and the parents function as teachers, the child is in treatment literally all of his or her waking hours, seven days a week and twelve months a year. Because of the potential for regression, especially in the beginning of treatment, there is no summer recess nor Christmas vacation. The mother, father, siblings, and, later, other children in the community -- essentially, everyone who comes into contact with the child -- is in a sense a teacher. The effort is to construct a special environment for children who do not learn in normal or ordinary environments. Maximal improvement will not be seen unless there is a major restructuring of the child's environment. Short of total restructuring, children may develop discriminated performance, displaying competence or control in one environment but not in others.

Early Learning

The first phase of teaching may be as elementary as teaching the child to sit on a chair in response to instructions to do so. New learning is initiated in the clinic or school during the first meeting of the teaching team. The child's parents and some eight or ten student volunteers are present, observing as the senior therapist (who has been working on the project for one or more years) demonstrates how to teach a child to sit in a chair, for example. Once the senior therapist is successful in this task, a student volunteer and then a parent tries to replicate the procedure. The entire teaching team takes turns, each working in the presence of the others, reinforcing each other for successes and pinpointing weaknesses. This sort of public teaching and planning occurs once or twice a week in the clinic and is called a staff conference. In other words, very little time is spent in special environments like the clinic. Essentially, all training takes place in the home, where the parents and students teach the child, for example, to sit in the kitchen, in the living room, in the bathroom, and in other areas of the house. Whatever the child learns is transferred to the home environment.

In addition to learning to sit when instructed to do so, the child is usually taught to follow three other initial requests. The second behavior typically taught is responding to the request, "Look at me." A third command, "Hands down," is introduced because autistic children frequently engage in a variety of self-stimulatory behaviors or inappropriate actions with objects. A fourth request, "Hug me," may be added to the list of training tasks, not only because it is relatively easy to teach but also because it makes teaching more reinforcing to adults if they get a hug once in a while. Part of our teaching philosophy is that the children have to learn to be nice to the adults who care for them.

At the same time that children are taught basic compliance to simple adult demands, the program simultaneously works to decrease tantrums. Dealing with tantrum behavior represents another set of skills that parents and volunteers must be carefully taught. There is also an effort to decrease obvious forms of self-stimulatory behavior, such as rocking, hand-gazing, and repetitive movements because these behaviors block acquisition of more appropriate behavior. Because they look bizarre to others, self-stimulatory behaviors also isolate the child from normal social contacts.

These three or four simple learning tasks and the concurrent reduction of tantrum and self-stimulatory behavior actually comprise a teaching program that could easily consume 16 hours a day, seven days a week, and which necessitates the involvement of many people. In this program, adults take control over the learning process; the children do not determine their own curriculum. Establishment of this basic control is essential if other kinds of learning are to be successful. When teachers can control such behaviors as sitting, looking, hands down, excessive self-stimulation, screaming, and biting, they can proceed to the training of other skills, such as language. On completing this first compliance program (which may require from one week to several months), parents and volunteers have also experienced a good introduction to the basic process employed throughout the program and have become familiar with terms like "reinforcement," "shaping," "prompts," and the like. The simplicity of the initial program guarantees that both the children and the staff will be successful.

Imitation and Early Language

The next phase of teaching focuses on helping the child learn to imitate. Training begins with non-verbal imitation: the child is taught to imitate gestures, movements, and facial expressions. It is generally easier for autistic children to imitate visual, as opposed to verbal or auditory, models. They begin by imitating simple behaviors like raising the hands, touching the tummy, clapping hands. Later, the introduction of more difficult tasks requires the child to imitate movements that become less distinct from one another and more difficult to discriminate (e.g., smiling vs. frowning). Imitation forms the child's basis for learning many subsequent behaviors, such as play, social interaction, and self-help. Because it is virtually impossible to build the complex set of behaviors known as "play" by means of straightforward shaping procedures, it is important that the teacher be able to rely on the child's imitative behaviors to develop these complex tasks.

Closely related to the motor imitation program are the procedures for teaching the child to match. In this program, the child is taught to match cards, starting with simple black/white discriminations, and progressing to more difficult matching of color hues, sizes and shapes, and possibly combinations of color and shape. Matching skills are used later to teach basic language concepts.

A third program at this stage stimulates the beginning of receptive language, through attempts to establish verbal control over the child's nonverbal behaviors. For example, once the child has acquired a set of gestural or bodily imitations, the adults work to bring these behaviors under the control of verbal instructions ("Hands up," "Clap your hands," "Touch the table," "Play with the ball"). Once all significant adults in the environment develop instructional control over the child, s/he is ordered around for most of the waking day. S/he cannot sit and self-stimulate or tantrum because there is too much to do: s/he has to sit, stand, turn around, look, play pattycake, and so forth -- all day. The program is clearly intrusive, and the child has little opportunity to be noncompliant or inappropriate.

The next program centers on teaching verbal imitation, which is by far the most difficult undertaking in the curriculum. At present, there are probably only a handful of people in the country who can adequately teach verbal imitation. Yet, if a child can be taught to imitate verbally, the likelihood that s/he will build vocal skills increases considerably. Typically, the child receives verbal imitation training for four to six months, after which a non-verbal communication mode (such as signing) will be substituted if basic verbal imitation has not been established (with the option of reinstating verbal imitation training at a later date). In any case, once a child is into this stage of programming, many people are intensely involved.

Early Social and Self-Help Skills

As a child becomes imitative, the program begins to teach certain basic self-help skills such as dressing, grooming, and personal hygiene (Baker, Brightman, Heifetz, and Murphy, 1977). It has often been necessary to help toilet train children in the early intervention program. To accomplish this, a team moves into the parents' house over a two or three day weekend and toilet trains the child according to established programs (Foxx and Azrin, 1974). The child is also taught to eat appropriately and to move about in stores and restaurants in a reasonable and acceptable manner.

More Language

The language program is probably the focal point of our work (Lovaas, 1977). The program begins with simple expressive language and attempts to make it as functional as possible so that there will be an immediate payoff for the child's efforts to talk. Contrary to the early compliance training, language training teaches the child to control adults with language in much the same way that the child was earlier brought under simple instructional control. Training progresses from demands and requests to more complicated language, involving abstract terms and appropriate grammar. Starting with simple abstract terms, such as those denoting size and color, instruction moves to more complex abstract terms, such as those involving prepositions and pronouns. Eventually, the child is taught fairly complex language, such as that involved in the discrimination of temporal cues and the building of verbal behavior for recall. Over time, s/he is taught to describe to adults, in appropriate grammar, the events of any particular day. S/he is taught to ask for information, relay information to others, and carry on conversational exchange.

It is important to stress that, if enought time and sufficient staff are available, there is really no limit to how much some of these children can be taught. Similarly, there are no limits on the complexity of the behaviors that can be developed. Since there is every reason to believe that language can be taught, there is also every reason to give teachers the responsibility for teaching it. This is not intended to be harsh or critical; rather, it is intended to challenge those theoretical psychologists and linguists who would impose severe limits on the futures of all individuals who start life with severe handicaps.

Adjusting the Child to the Community and School

The final major program component helps to integrate the autistic child into his or her community. By now, the child has learned appropriate skills for eating at MacDonald's and is ready to move gradually into more sophisticated restaurants. S/he has been carefully taught to behave acceptably during short shopping visits to the local 7-11 store and is ready to move into the Safeway during the shopping rush hours. All programs begin slowly and very carefully and are elaborated very systematically. This shaping also applies to school placement.

Having learned a great deal about behavior modification during the six months to a year that a child has been in treatment, the parents accompany a senior project staff member on visits to various schools to find an appropriate classroom in the community. A good classroom is a structured classroom whose teacher invites parents and student inside and willingly enters into a collaborative working arrangement. The initial request is that the teacher include the child for perhaps half an hour to an hour per day.

In early contacts, we are careful to refrain from using the term "autism" because of typical teacher reactions to that label. Many teachers have misconceptions about autism: they may believe that parents have caused the problem, or they may regard autism as a chronic problem that cannot really be helped. Rather than begin with a negatively loaded diagnostic term, we describe the child as language-delayed, an explanation that is usually accepted readily by teachers. Later, as we become better acquainted with the teacher, we may confess that the child was once diagnosed as autistic, but by then the teacher is part of the team and is not put off by the label.

The move into school progresses in very small steps. A common first step is to visit the receiving school and find out what skills it emphasizes. On the basis of this information, parents and volunteers "play school" at home so that the child can practice the behaviors that s/he will need at school. The teacher's job is then to establish control over what the child has already learned at home. It is not difficult to practice school at home: it may involve buying a rug, having several people sit in a circle around the rug, identifying the school's favorite songs, and practicing various aspects of the curriculum. When the child begins school, he attends only for a short period (perhaps an hour or so a day in the beginning), and there is always a parent or volunteer there working with the child and the teacher to ensure a carry-over of programming. In relation to the child's performance, the school day is gradually lengthened and assistants are faded from the classroom.

During this time, the child is also taught some new learning strategies. Observational learning is an extension of earlier imitation training efforts, in the sense that the child is taught to learn new behaviors by observing other people's performance. Similarly, s/he is taught to obtain information by listening to verbal exchanges among other people. Because of the absence of appropriate peer models, autistic children should not be placed in classrooms with other autistic children.

There is considerable variability in the ease with which these children can be integrated into a normal classroom. Whereas about half of the children from the early intervention project have failed in regular classrooms, the other half have succeeded. In some of the successful cases, project supports in the classroom could be gradually withdrawn after a month; with others, fading of supports required up to two years. Project data make it clear that one cannot assume that a child will perform what he/she learned in one situation when placed in another. Rather than anticipate generalization, it is more practical to monitor the transfer process and explicitly program for generalization when it does not occur spontaneously.

OUTCOME DATA

Data from the early intervention project suggest that, if young autistic children receive this sort of intensive treatment, about half of them will approach normalcy. The degree of their success will be reported in another 18 months when the youngest children in the intensive treatment group have reached 7 years of age and should have completed first grade. At present, the outcome of 50 percent of the students in the intensive treatment group looks very encouraging in the sense that they are functioning adequately with minimal help in a normal school setting. These children reach or approach normalcy. About 40 percent of the students treated appear essentially asphasic. They still have extensive problems with language and manifest occasional self-stimulatory behavior and inadequate social interaction, and they are served in classes for aphasic children. Despite continued problems, this 40 percent has made substantial improvement. The remaining 10 percent of children in the intensive treatment condition have made limited or minimal progress, even though they have been in intensive treatment for as long as five or six years. They have little or no language, toy play, or peer interaction. In contrast, the minimal treatment group that received ten hours or less intervention per week has no child in normal school placement. Rather, these children are essentially aphasic or not improved.

There are several points to be made from these data. First, it is apparent that the longer one works with these children, the more successful one can be. We still do not know the limit to how many of these children can progress with systematic educational intervention. There is every reason to be optimistic about substantial improvement in autistic children, provided that procedures are intensive and are initiated early. Second, it is not germaine to talk about autistic children as a homogeneous group; this has been abundantly clear in their several distinct patterns of response to the early intervention program.

While it is apparent that younger autistic children do much better in treatment than do older autistic children, this should not be misconstrued as the author's lesser interest in helping older children. On the contrary, in 1974 our project was instrumental in establishing the first community-based teaching homes for autistic persons at Camarillo State Hospital in California. Just as it is rewarding to see a young autistic child progress in a regular preschool program, so is it extremely gratifying to remove an autistic person from an institution where he may have lived for 15 or 20 years and then see him grow meaningfully in a more appropriate environment. There is no question that autistic persons, be they 20 or 30 years of age, can make significant changes. In fact, it is amazing how much they can improve. No concerned therapist nor educator would wish to deny the autistic individual, or himself, such an experience.

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THE EVOLVING PARENT-PROFESSIONAL RELATIONSHIP

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Public Law 94-142 has brought public educators face to face with their responsibility to provide appropriate education for individuals with autism and other severely handicapping conditions. Early efforts to meet the mandates of Public Law 94-142 and Section 504 of the Rehabilitation Act of 1973 have been concerned with establishing programs that provide basic educational services to autistic youngsters. Individual educational programs (IEP's), which are legally adequate and acceptable to all parties involved, have been implemented for many autistic youngsters. However, program quality has yet to be adequately addressed. If the IEP is to continue serving as a vehicle for improving educational services, it must more adequately address the question of functional programs for our children. This paper will discuss parents' perceptions of impediments to developing quality education, and will propose possible solutions for these problems.

BUILDING PRODUCTIVE RELATIONSHIPS WITH EDUCATORS AND OTHER PROFESSIONALS

Parents of children with autism deal with a diverse professional community, including legislators, bureaucrats, teachers, psychologists, counselors, fiscal administrators, social workers, physicians, program directors, advocates, researchers, case managers, and other service providers. The lack of coordination between these individual disciplines is frustrating to parents, making it difficult to use them as resources. It is crucial that the various disciplines form a partnership, each offering its own viewpoint toward meeting the needs of the handicapped individual and his or her family.

It is also important that each of us recognize the limitation of our respective roles from our isolated points of reference. More collaboration and communication between parents and various significant disciplines must be established to provide meaningful program solutions and future directions for society in serving the needs of individuals with autism. Parents and professionals must learn to work together and not let differences paralyze efforts to enhance the lives of autistic individuals.

It must be noted that disagreement need not be counterproductive. If all parties involved recognize their common purpose of serving the child, conflict resolution methods can clarify what the needs may be. An example is the team effort in assessing the developmental skill levels of each child. We should not assume that all observations will be in agreement. Each observation should be valued; each viewpoint brought to bear in educational planning enhances the total effort to serve the child's needs. Due to the nature of the disability, observations of the autistic student often differ between home and school or between parent and educator. The parent and teacher may make totally different observations about a student's buttoning ability. An IEP objective formulated by teachers may state: "The student will button his coat within one minute, independently, given a verbal request." Hearing this at the IEP conference, the bewildered parent may say, "He always buttons his coat independently at home." Rather than considering this a conflict or a disagreement, the parent and teacher should use their assessment results as a basis for productive educational planning. It may become apparent that the student does not need to be taught buttoning, but needs to be taught to generalize this skill from home to school.

PLACEMENT OPTIONS

While students with autism share several characteristics, there are enormous individual differences, and the same educational setting may not be appropriate or beneficial for all. Options currently available in education are limited. Service delivery models must be expanded. As advocates for their children's education, parents can help plan more appropriate service delivery models. They might ask themselves, "What setting will best serve my child? -- An autism class within a special school? A self-contained autism class within a regular school? Integration for all or part of a day? A class containing children with various handicaps? Departmentalization with part-time integration?" Both a thorough assessment of the individual's needs and an evaluation of placement alternatives are necessary if we are to serve the student most appropriately. Parents need to work with educators to determine the best placement option, as well as program objectives.

PARENT VULNERABILITIES AND PROFESSIONAL COMPETENCIES

Parents and professionals must also work closely together in determining program decisions and in implementing educational programs. Continual conflict between these groups represents a serious roadblock to effective education. Two main areas of conflict frequently arise: parents feel that neither their opinions nor the individuality of their child is taken seriously, and they often question the competence of educators to deal with the problems of autism.

It is essential that parents be considered competent decision-makers, not just token members of the planning team. It is the educator's role to work with parents in determining needs; we do not want professionals making unilateral decisions regarding which behaviors to elicit or extinguish. In designing a program, educators and parents would be well advised to consider the child's needs independently from an existing program option. Parents often feel that the program is a "sacred cow" and their children must fit the program's expectations. This attitude engenders the fear that the child's strengths, abilities, and unique learning characteristics are not the main considerations in determining program recommendations.

Perhaps some understanding of the parent's feeling of vulnerability would help create a less antagonistic relationship. As parents, we go through frantic stages when we will do anything if a remote possibility exists to help our child. Yet sometimes, being aware of our own vulnerability, we respond to suggestions in a defensive manner. Often such defensive responses are the result of long and futile experience in seeking assistance. Professionals may have already directed us to many ridiculous solutions that have not helped but have only increased stress in our already stressful lives. Parents don't want this vulnerability to immobilize them in obtaining necessary services for their children. When parents display dissatisfaction with their child's program, it would be helpful if the educator could seriously attempt to determine what the parents really want for their children, and address these concerns in arriving at solutions that are mutually acceptable.

We do not overlook the significant accomplishments that our mutual parent-educator efforts have made toward educating autistic children. However, we expect professionals of all disciplines, even those pioneers in the field of educating autistic children, to expand their horizons and continue learning and growing. In leaving our children in the hands of educators for much of the day, we are aware of the tremendous power they exert over our children's lives. We want educators to realize the enormous impact their decisions and practices have on the lives of our autistic sons and daughters, and thus on our entire family constellations. Ginott (1972) refers to the overwhelming power of a teacher to create the classroom climate, to make a child's life miserable or joyous, to be a tool of torture or an instrument of inspiration. Given that teachers have such power, it is essential that administrators assign professional and paraprofessional personnel who exhibit competencies in dealing with autistic students. We want our children to be on the receiving end of the education process, not solely providers of an educational experience for an inexperienced teacher. We do not expect administrators to be experts in autism, but do expect them to make the services of recognized experts available to our youngsters. If experienced personnel are not available, administrators must provide for inservice training, and make consultant services available to those working directly with our children.

PARENT TRAINING

While we welcome the public mandate requiring us to be viable team members in determining our children's IEP's, we do not want our children's programs to be contingent upon our ability or willingness to cooperate in a parent-training program. Programs that emphasize the parent training aspect run the risk of abdicating teacher responsibility in educating the child. The success of a program cannot depend on whether or not a parent cooperates.

A professional must ask himself why he is asking a parent to carry out a particular educational procedure. To what degree can a school intrude upon the lives of the family members of an autistic youngster, and at what cost? What personal and family disruptions have to be made to carry out the request. Is there an expected outcome that will balance the necessary effort put forth to carry out the plan? Will there be ongoing support and continuous re-evaluation of the results to determine if the effort is worthwhile and should be continued?

Promoting a close home and school relationship, particularly with the reticent parent, may be facilitated by including the parent in determining goals. If the first objective is a task parents have long wanted their child to accomplish, it is more likely that they will actively participate. The school can start the process, show the parent observable growth, and ask for cooperation to continue and further refine the elicited skill or behavior at home. Effective methods can be shared, along with mutual re-evaluation of the process and outcome. Very often, when parents observe progress brought about by someone else, they will become more willing partners, because they feel they are not alone but have support in reaching a shared goal. This method also helps parents gain a realistic view of their children in terms of current functioning levels and future expectations.

Effective parent training must be expanded to include both immediate and long-term needs. Not only is it important to learn to deal with particular behaviors when the child is very young, but we must concern ourselves with being a parent over an extended period of time. Needs of parents, families, and autistic people change. We must address the dependency problem as our children enter adulthood, and concern ourselves with dealing with these program delivery systems that will serve people with autism throughout their lives.

PIONEERS FOR THE FUTURE

Parents who pioneered legal program mandates for their young autistic children must once again be advocates for necessary services for the young adult. We are pleased that program alternatives for young autistic children are increasing, but now there needs to be greater emphasis on establishing programs for the adolescent and young adult population. The fact that 95 percent of people with autism are eventually incarcerated in state hospitals attests to the importance of redefining needs and looking toward community alternatives.

Currently, interagency agreements at the state level do not clearly define which departments within state and local government have responsibility for implementing specific services for those with autism. Parents resent being pitted against the various bureaucracies to obtain necessary services. This has always been a problem with school-aged autistic students, but becomes worse when they become young adults. Currently, many agencies fiscally responsible for providing programs can dismiss individuals from eligibility for services solely on the basis of chronological age. This problem is aggravated by the fact that no agency is responsible to continue education as a community-based service after the youngster reaches age 21.

Ironically, while many states spend money to place individuals past age 21 in institutions, there is little or no funding to keep the autistic individual in the community. Mechanisms must be developed to redistribute institutional funding to provide individuals with non-institutional alternatives.

Vocational training and lifetime planning for the autistic adult must be addressed. The parent-professional partnership must address basic issues, such as: where will the person with autism spend most of his day, year in and year out; how will he spend most of his day, year in and year out; what basic survival skills must this person have; if he cannot manage these skills, who will provide them? These questions cannot wait until the student reaches age 21, but must be addressed at the earliest possible age. Tentative answers in the early school years will better enable the educational team to plan functional curricula. The dependency problem becomes increasingly complicated during late adolescence and early adulthood. Often the young adult with autism can execute various self-care and independent living skills, but needs supervision when dealing with the broader environment. This is particularly true because most autistic people are unable to make rational or inferential judgments. The needs of young adults must be realistically assessed in order to determine how much and what kind of supervision is required to live in the most natural and least restrictive environment.

If, by adolescence, an individual is still considered severely or profoundly handicapped, we must realistically expect that a highly structured and highly supervised environment will be required. Residential placement without a good day program is futile. Autistic people need and deserve meaningful activities to fill their days (Lettick, 1979). The inability of autistic persons to bring meaningful structure and organization to their own environments generalizes all too well here. Carefully planned quality programs, including adequate supervision, are essential to maintain progress and facilitate continued growth.

CONCLUSIONS

Parents and professionals must work together to develop research and intervention priorities. We must identify the agencies that are appropriate targets for research support (Reichler, 1979). Close collaboration between parents, professionals, and organizations with vested interests are essential to effect these changes. Finally, we cannot state strongly or often enough that, while people with autism do have characteristics in common, each is a unique individual with divergent needs. Parents will continue to work with educators and other professionals to assure that program alternatives most appropriately meeting the autistic person's needs will become increasingly available.

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SECONDARY EDUCATION FOR SEVERELY HANDICAPPED STUDENTS: GUIDELINES FOR QUALITY SERVICES

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After a long period of relative neglect, secondary education for severely handicapped students has now emerged as both a priority of the U. S. Office of Special Education and a critical concern to many local education agencies. The recent interest in secondary-level services, like the extension of public school opportunities to younger severely handicapped students, has resulted in large part from social and legal pressures external to special education itself. One result of this developmental process is that educational services have preceded professional consensus--or even careful debate--on the nature and purpose of secondary programs.

The purpose of this chapter is to present a set of criteria, or program qualities, that should characterize model secondary programs for autistic and other severely handicapped students. These criteria derive both from a view of the general role of secondary education and from exemplary practices in education of severely handicapped students. The presentation of these qualities as model program characteristics is intended to stimulate discussion of the ideological and empirical basis for emerging educational services.

While one objective of the chapter is to address issues in education of adolescents labeled autistic, it is the authors' view that there is little to be gained from segregating these individuals from other severely handicapped secondary students. Regardless of the specific nature of their disabilities, all severely handicapped students confront similar shortcomings in present educational services and face similar difficulties in transition from school to work and adult life. Therefore, the chapter addresses the general problem of educating severely handicapped students with the assumption that the discussion will be appropriate to professionals and parents concerned with autism.

The burst of professional energy directed to the educational problems of severely handicapped students in the wake of the 1972 PARC consent agreement generally focused on the role of early intervention and the design of elementary classrooms. Little attention was paid to the design of programs for secondary-age students. Teachers of severely handicapped adolescents today enter classrooms with as little help from research and demonstration efforts as did their predecessors staffing public school programs for elementary-age severely handicapped students earlier in the decade. Several factors might explain the relative inattention to services for adolescents and young adults with severe handicapping conditions. The labeling of severely handicapped students as "developmentally young" (Stephens, 1971) and the general tendency to focus on their "mental age" rather than their chronological age (Brown, Branston, Hamre-Nietupski, Pumpian, Certo, and Gruenewald, 1979) contributed to the image of the severely handicapped as "eternal children" (Wolfensberger, 1972) and detracted from the need to design appropriate services for adolescents who happened also to present severe instructional and management problems.

A second factor contributing to the paucity of secondary-level services emerges from an interaction of student characteristics and teacher competence. The education of adolescents requires a very different kind of stamina than does provision of services to infants and younger children. With increasing student age and size, management difficulties become dangerous, and disruptiveness borders on delinquency. Teachers without a complement of effective management and programming skills can hardly hope to provide effective services or enjoy the reinforcers that accrue from observable pupil progress.

Albeit unwittingly, federal policy and funding priorities have probably contributed to a benign neglect of the educational needs of secondary-level severely handicapped students. The relative emphasis on early diagnosis, intervention, and educational services for young handicapped children has directed both attention and resources away from the needs of the handicapped adolescent. While the U. S. Office of Special Education has a substantial program focused on early education (The Handicapped Children's Early Education Program with a budget of $20 million for FY 79), there is no program comparable in either stature or resources that focuses on the needs of students facing the transition from school to work and adult life.

Perhaps the most significant factor contributing to the neglect of secondary-level services arises from the patterns of institutionalization that have typically reduced the number of severely handicapped adolescents served in public school programs. Many individuals with autism and other severe handicapping conditions were institutionalized as children prior to mandated public school services and remain in segregated residential programs as adolescents despite the recent development of community opportunities. Combined with the fact that many students have typically been institutionalized at the onset of adolescence, this has resulted in disproportionately low enrollments at the secondary level and has contributed to the general lack of public school expertise with more severely handicapped student groups.

Despite the paucity of research efforts and public school experience with the population, secondary-aged severely handicapped students increasingly are attending schools in their home communities. The practical needs of these students and the adaptations required of school systems have begun to stimulate professional interest and to command federal attention.

OBJECTIVES OF SECONDARY PROGRAMS FOR SEVERELY HANDICAPPED STUDENTS

Throughout the history of American education, schooling has been alternately regarded as the means for teaching the skills required for work and adult life and as the mechanism for improving personal development and maximizing self-fulfillment. While the debate regarding the role of education as a tool of societal versus personal development will, in all likelihood, never be fully resolved, the field of special education has adopted the practical philosophy that is evident in the field of career education. Basic to career education is a commitment to developing knowledge and skills to enable individuals to master their non-school environments as well as a commitment to training a salable entry-level occupational skill (Brolin and Kokaska, 1979).

Secondary education for severely handicapped students must provide a dual service: (a) preparation for functioning in future work and living environments, and (b) effective transition to those environments. This dual responsibility is an outcome of several factors. Relevent training and preparation are necessary because post-secondary educational options are rarely available for severely handicapped citizens even though they may in fact still lack the skills required for competent adult functioning. Because post-secondary educational programs are not an option, the public schools must provide relevant training for adult life. Education at the secondary level must abandon the general education approach that assumes that, if the student has more skills, s/he will automatically have more opportunities and independence; instead, it must focus on the development of practical skills that will ensure participation in important adult activities. The burden for providing severely handicapped students a transition to adult life becomes the responsibility of the public schools because these students seldom have access to the social service transition programs (community colleges, manpower training, vocational rehabilitation) that are routinely available to mildly handicapped students. Transition services typically provide support for locating a job and securing living arrangements, training skills required in those particular work or domestic environments, and monitoring the adaptations necessary to support successful performance (e.g., from a six-hour school day to an eight-hour work day, from transportation via school bus to independent travel to the job site, and so on).

To achieve the dual objectives of preparation and transition for students who are severely handicapped, secondary programs must differ markedly both from secondary programs for mildly handicapped students and from the more familiar model of services for severely handicapped elementary students.

PROGRAM QUALITIES

The following section describes a set of criteria or program qualities which should guide the design of secondary programs for severely handicapped students. The qualities are derived from a normalization ideology (Wolfensberger, 1972), from the literature on career education (Brolin and Kokaska, 1979), and from model educational programs serving younger severely handicapped students (Sontag, Smith, and Certo, 1977).

Integrated

The success of secondary education for severely handicapped adolescents is measured by the extent to which students function in and meet the requirements of complex community settings. Since one of the most obvious characteristics of post-school environments is frequent interactions with people without identifiable handicaps, it is only logical to plan educational programs that duplicate this feature of the criterion environment and which actively build skills required for successful interaction with nonhandicapped society. These skills cannot be taught in the absence of nonhandicapped peers. The importance of integrated educational environments is reflected in litigation (Halderman v. Pennhurst), legislation (the least restrictive educational environment provision of P.L. 94-142), and professional opinion (Bricker, 1978; Brown, Branston, Hamre-Nietupski, Johnson, Wilcox, and Gruenewald, 1979; CEC, 1979; Gilhool and Stutman, 1978; TASH, 1979), as well as by successful demonstrations of integrated educational services for severely handicapped students (e.g., Wilcox and Sailor, in press).

The integration of secondary-age severely handicapped students is not tantamount to "mainstreaming" students with severe handicapping conditions. Mainstreaming typically connotes regular class placement with support services from special education. Integration, on the other hand, requires regular school plecement, enabling severely handicapped students attend school with nonhandicapped peers. A commitment to integration is not to suggest a lack of access to special education services or technology; it is a commitment to the delivery of those services in environments which reflect the integrated and heterogeneous nature of society.

Discussions of "least restrictive environments" have typically focused on the characteristics of the physical placement (cf. Aloia, 1978; Kenowitz, Zweibel, and Edgar, 1978). While the physical integration of severely handicapped and nonhandicapped students is a necessary condition,it is not sufficient to realize truly integrated environments. The nonhandicapped students attending school should be age peers of the severely handicapped students. Educational integration is compromised to the extent that the schoolmates of severely handicapped secondary students are elementary-aged or preschoolers. Integration also requires planned interaction between handicapped and nonhandicapped students. Simple coexistence within the same physical facility does not replace the need to schedule non-academic contact (e.g., integrated homerooms or lunchrooms), as well as opportunities for structured interactions (e.g., in peer tutoring arrangements). Other important, though perhaps less obvious, components of integration relate to organization of the school day and transportation to and from school. The length and organization of the school day for autistic and other severely handicapped students should approximate that for nonhandicapped peers. To schedule handicapped students to arrive late or depart early or to have a separate lunchroom schedule is to limit possibilities for functional integration. Similarly, to establish a transportation system for severely handicapped students separate from the system for nonhandicapped students (e.g., regular school buses and a "handicapped" bus) restricts possibilities for social interaction and adaptation, and for learning important skills (community mobility) in a setting that approximates the natural community.

Age-Appropriate

Programs for secondary severely handicapped students should be appropriate to their chronological age. This quality is an extension of the requirement that such students be integrated into school buildings which house their chronological age peers. Since the goals of special education are to minimize the discrepancies between handicapped and nonhandicapped individuals, educational arrangements which exaggerate or highlight deviance labels should be avoided. Instructional tasks or materials more typical of chronologically young students (large piece puzzles, blocks, doll play, color naming, learning letter sounds) should be replaced with tasks and materials appropriate to the student's age and surroundings. It is inappropriate and stigmatizing for severely handicapped high school students to cut and paste large snowmen as a winter holiday art project. A more appropriate art activity might be to block-print greeting cards. The requirement that tasks and materials be appropriate to the chronological age of the student does not rule out the fact that severely handicapped secondary students may, in fact, still have basic skill deficits. The implication is that instruction should incorporate materials and tasks that highlight similarities with age peers. It would be more appropriate for a high school student who lacks proficiency in basic arithmetic operations to work with a handheld calculator than to count blocks, lines, or beads on an abacus. Similarly, the language content for severely handicapped secondary students should reference objects and activities that are salient in their recreational, vocational, and home activities rather than emphasize a vocabulary typically acquired by early language learners.

At another level, the commitment to providing age-appropriate programming requires that the school and extracurricular activities of nonhandicapped students be referenced in the design of services for the severely handicapped. For example, if the school district provides vocational training and placement for nonhandicapped high schoolers who are not college-bound, it is appropriate for severely handicapped learners to receive comparable services and opportunities. If nonhandicapped students have open campus privileges during the lunch hour, then a legitimate educational goal for a severely handicapped student would be to travel to a local restaurant and purchase lunch off-campus. Further, both the frequency with which nonhandicapped students eat off-campus and the locations they patronize should help define parameters of the training program. Since high school students typically spend substantial time outside the school in work experience or distributive education programs, it is appropriate that similar time allocation be reflected in services to the severely handicapped. With increasing age, these students should spend proportionately less time in classrooms or school buildings and more in work and leisure training in the community.

A final implication of age-appropriate services relates to the programming base for students aged 18-21. While P.L. 94-142 clearly establishes the right of handicapped students in this age group to a free appropriate public education, high schools rarely serve their nonhandicapped agemates. If there are no nonhandicapped peers in the program, it is neither fully integrated nor age-appropriate. Services to 18-21 year-old handicapped students would be more appropriately located on community college campuses than in high school facilities.

Community-Referenced

The selection of goals, instructional procedures, and contingencies for secondary severely handicapped students should be carefully referenced to the local community. Community-referenced curriculum design stands in sharp contrast to curricula and programs organized to follow hypothetical child development or traditional academic sequences. A community-referenced approach eschews traditional curriculum domains (language, cognitive, gross motor, reading, math, and so on) and instead employs categories that derive from the basic demands of adult functioning (work, leisure, community participation, and residential living). There is an emphasis on skills that are functional (i.e., whose performance is frequently required in the actual community environment) and on criteria that relate to the demands and expectations of the community. A commitment to community-referenced programs reflects the career education orientation of secondary special education and underscores the need to program explicitly for student performance in actual target environments.

Community citizens seldom differentiate between skill acquisition and daily performance. An individual's success is dependent less on how many skills s/he has mastered than on how independently s/he can perform. The importance of academic skills acquisition (e.g., learning to sound out five words or add 2-digit numbers with carrying) pales in comparision to basic community mobility skills (e.g., crossing controlled and uncontrolled intersections). Being able to print a grocery list is considerably less important than being able to use a picture list to shop for groceries and personal items.

The strategy basic for creating community-referenced programs is an environmental inventory process along the lines of that described by Brown and his colleagues (Brown, Branston, Baumgart, Vincent, Falvey, and Schroeder, 1979; Brown, Branston, Hamre-Nietupski, Pumpian, Certo, and Gruenewald, 1979; Brown, Falvey, Vincent, Kay, Johnson, Ferrara-Parrish, and Gruenewald, 1979). The environmental inventory requires direct inspection of the actual domestic, vocational, leisure, and community environments to which a student has, or might be expected to have, access. These settings are then analyzed to delineate the performance demands, naturally occurring cues and consequences, environmental arrangements, and so forth, actually present in those natural environments. This information, in turn, is used to design either situation specific training or general case programs (Bellamy, Wilson, Adler, and Clarke, in press) to develop the requisite skills.

An environmental inventory strategy results in locally developed curriculum materials. A commercial curriculum package, by definition, is not community-referenced since the content of such packages is not generated on the basis of local opportunities and arrangements with which students will actually come in contact. The curriculum development process rather than the curriculum content itself, however, can be formalized or standardized for general consumption. A secondary program that is community-referenced focuses training on the skills/tasks particular to local employment opportunities, local recreation and leisure activities, use of community transportation systems, and so on. In other words, long-range objectives for severely handicapped secondary students must relate to the next environment in which s/he will likely participate. While in one community it may be important to teach students to use the mass transit system, in another community without mass transit, independent mobility objectives could be met by training bicycle riding or by training students to call taxi service. The functional outcome--community mobility--is the same, though the form of the response depends on features of the particular community. Similarly, while operating a record player would seem an age-appropriate recreational skill for severely handicapped high school students, it is not an appropriate instructional objective if the student's domestic environment does not contain a phonograph. No particular objectives are a priori appropriate; each must be justified as appropriate for and important in the real community, domestic, or vocational setting.

Community-referencing serves not only to validate objectives but also to establish priorities among objectives. Rather than selecting training targets according to their relative position on a "developmental sequence" or according to whether or not students have the necessary "prerequisite skills," educational priorities are established according to the frequency or the importance of behavior in the environment.

Logically, it is a small step from using actual community environments as a source of instructional content to using these same environments as a location for training. Just as severely handicapped adolescents cannot learn skills to function in integrated environments if their education is confined to handicapped-only facilities, neither can they learn to cope with natural environments if their only instruction occurs within school walls. While natural environments are more difficult to manage, they are the only settings that contain the full range of stimuli to which the student must learn to respond. Community-referenced curricula lead to community-based training.

Future-Oriented

A future orientation is a natural and necessary complement to community-referencing. While a straight community-referenced approach would presumably result in programming in and for existing domestic, vocational, community, and leisure/recreational opportunities, those currently available environments are, in too many cases, less than satisfactory. Programming only for current opportunities in the adult service system constitutes preparation for institutional programs or "adult preschools." This is surely not the intent of education. Recent changes in adult services (e.g., attention to civil rights, legislative entitlements for medical services and income supports) would seem to foreshadow additional changes at the community service level (Bellamy, Wilson, Adler, and Clarke, 1980). Current post-secondary options hopefully do not constitute a representative sample of environments and opportunities that will be available several years hence. Future environments should reflect increased access, community living alternatives, increased opportunities for non-trivial work wages, as well as decreased tolerance for the eternal preschool.

A future orientation provides a needed counterpoint to the status quo of 1977, where 95 percent of adults with autism were "served" in institutional programs. Instead, programmers should anticipate changes in the service that will support less restrictive services and more independent performances. While students with autism today face a high probability of institutional placement, secondary programs must operate under the assumption that they are training, not "good institutional residents," but rather program graduates who will have access to small community-based residential programs. In the vocational realm, there is currently a high probability that severely handicapped adults will be placed in "adult day programs" (Bellamy, Sheehan, Horner, and Boles, 1980), with little opportunity of earning meaningful wages. Since there is some basis for anticipating changes in this system, secondary programs should pinpoint locally relevant work skills as important instructional objectives. In short, a future orientation requires programs to look and plan ahead for expanded opportunities for severely handicapped school-leavers.

Non-Categorical

Natural community contingencies are basically non-categorical. The demands for independent performance in important adult life domains are identical for everyone, regardless of the presence of a handicapping condition. Eligibility for adult and transition services focuses more on economic criteria than educational or medical labels. The definition of developmental disabilities (Boggs and Henney, 1979) is based on functional deficits in adult performance rather than on diagnostic category. Access to vocational rehabilitation services depends on the presence of employment barriers without regard to type of handicap. CETA programs screen on the basis of unemployment, low socio-economic status, or a broad generic definition of "handicapped." Similarly, Section 504 of the Rehabilitation Act is concerned with handicapped individuals without regard to category.

Rather than reinforce categorical differentiations that will be ignored by the adult service system, secondary programs serving severely handicapped students should emphasize the elements common to all students: community performance demands, needs for functional objectives and age-appropriate materials, and existing barriers impeding access to the adult service system. Low-incidence populations confronting such problems would do well to aggregate their numbers. The probability of institutionalization increases when entire service programs must be supported for single individuals. Functional alternatives to categorical designations include age-level differentiations, groupings based on programming needs, or neighborhood service groupings.

Comprehensive

The comprehensiveness of a program should be judged, not against what a teacher can program, but what his/her students need. Too often, secondary programs have been governed by the "law of the instrument": if all you have is a hammer, then you treat everything as a nail. Limits on the scope of programs usually reflect teacher skills, constraints on classroom operation, and the availability of materials rather than the performance deficits or instructional needs of students. If graduates are to be independent and productive in post-school environments, then they must be competent at various tasks and in various settings. This implies that secondary programs must develop strategies for fitting into the local economy and for teaching skills that are not normally practical in the classroom. Comprehensiveness cannot be judged by reference to coverage of traditional "developmental" curriculum domains but by the extent to which students conform to expectations for adult functioning. Special educators may not currently have the content skills to develop student competence in domestic living, local work, or community mobility. They may also lack the process skills to assist students to access CETA, SSI, or other components of the adult service system. These deficits, though significant, should not detract from student needs for comprehensive preparation and transition services.

Parental Involvement

The role of parents in the IEP process for secondary-age severely handicapped students is different from their role for children in early intervention or elementary programs. In both preschool and elementary programs, parents and educators have longitudinal sequences, based on either child development or normal school curricula, to guide the setting of student objectives. For secondary students such sequences are indefensible. Rather than pinpointing the next objectives in a sequence, parents must choose among options within vocational, domestic, community, and leisure domains and select from among performance strategies (degree and type of prosthetic modifications). For each objective targeted, there is a very real "opportunity cost": targeting any single skill consumes valuable instructional time that might otherwise have been devoted to other skill areas. This dilemma, of course, has always existed but becomes especially acute at the secondary level where there are numerous training needs and relatively little educational time.

The values of parents are more important and more apparent in educational programming for secondary students because there are not skill sequences per se. There is, for example, no logical or necessary relationship between learning to shop for groceries, learning a factory job, and learning basic domestic maintenance. Decisions regarding which task is taught first, the amount of time invested, and the expected approximation to normal (rather than adapted) performance depend not on logic but on value judgments of parents and professionals.

Effective

Effectiveness is a key criterion in any educational service. Regardless of other qualities it may embody, a program that does not achieve specified goals for students can be viewed as unduly restrictive (Laski, 1979). It is important to realize that the effectiveness of secondary instruction should be measured, not in terms of accumulated knowledge or classroom behavior, but rather in terms of changes in daily performance in residential, vocational, leisure, and community environments. Since the critical measures relate to the functional performance of skills in natural settings, neither students nor programs can be appropriately evaluated by paper and pencil tests or performance on simulated tasks. New measurement procedures must be designed to monitor typical performance on important life tasks (Weissman-Frisch, Crowell, Bellany, and Bostwick, 1980). It is less important that a secondary student learn 10 new sight words, eight color adjectives, or how to clip his/her fingernails than that s/he show increasing participation and independence in daily routines, improved access to community services, development of personal options, as well as to employment and productivity.

IMPLICATIONS

Each of the program qualities advocated above should assist secondary programs to meet the dual objective of preparation for and transition to normal adult environments. While research per se provides virtually no assistance in operating programs which embody the target qualities, examplary local services and federal demonstration projects do offer some guidance. To realize model program qualities will require significant changes in current approaches to curriculum, instructional methods and materials, and program organization, as well as to the transition to adult services.

Curriculum

To devise a curriculum that is at once age-appropriate, community referenced, future oriented, and comprehensive, and that involves parents, is a formidable task. It is made more so by two important implications of these qualities. First, major parts of the curriculum must be referenced to local jobs, local residence options, local leisure opportunities, and other aspects of the present and future local environments. Second, there is seldom time to teach severely handicapped adolescents all the skills needed for community participation, so difficult choices must be made among important educational goals.

Local Referencing. Referencing curriculum content to local expectations has three implications for secondary programs. First, it reduces the utility of packaged curriculum materials. Instead of purchasing or adopting materials, task analyses, or skill sequences from curriculum developers, schools must invest in analysis of local community options. Certainly, there are some aspects of community performance that are applicable across settings. Personal care, domestic living, shopping, time management, and other apparently common skills have been widely analyzed and included in curriculum packages. However, the variety of local support arrangements creates extreme differences in the skills required for competence even in these supposedly common areas. Local analysis of specific skills is still needed for efficient preparation and transition.

The second implication of local curriculum referencing relates to sequencing of educational goals. Unlike traditional curricula, which present a series of progressively more difficult skills, local referencing results in a curriculum composed of alternatives that may be selected in any sequence. Whether a student learns to use the local laundromat before or after s/he learns to order a taco from the restaurant near school is an individual issue, not a generic curriculum sequencing problem.

The third implication of local referencing is that it focuses attention on daily performance rather than the continued acquisition of skills. At issue is not what a student can do in response to instructional cues in the classroom, but rather what s/he does on a regular basis in domestic, leisure, and community settings. The effects of this shift are extensive. If the effectiveness of secondary instructions is assessed by measuring daily behavior in natural settings, the application of existing skills, rather than development of new ones, would take priority. Similarly, emphasis would be placed on the development of functional alternatives, environmental modifications, and community-based practice. If actual performance in non-school environments is the focus of curriculum efforts, it is difficult to argue that acquisition of basic arithmetic facts should take precedence over development of a functional strategy for personal shopping.

Choices among goals. Almost by definition, severely handicapped individuals are characterized by extensive performance deficits in relation to the expectations of normal community environments. While each of these deficits might well be remediated with appropriate programming, time is seldom available in secondary programs to target all deficit areas successfully. Thus, significant opportunity costs are associated with each educational goal. A choice of any given goal means that time will not be allocated to other important performance areas. In a locally-referenced curriculum, this choice cannot be defended with the argument that some goals logically precede others. As a result, the value judgments of teachers, parents, advocates, and others assume critical importance in selection among possible educational goals. As the forum for such choices, the IEP meeting should become a key aspect of the curriculum definition process.

Taken together, local referencing and individual choices among goals should create a new style of curriculum in secondary programs for severely handicapped students. Evaluated by impact on daily performances, geared to the values of individual students and their families, and based on an analysis of local performance expectations, the curriculum should be characterized by local development, diversity across settings, and the availability of individually appropriate alternatives.

Instructional Methods

The methods and materials used in secondary programs for severely handicapped students should reflect the qualities of age-appropriateness, community referencing, parent involvement, and effectiveness. The implication of these qualities for daily program operation center around the definition of effectiveness as a change in regular performance outside the classroom. Methods are useful to the extent that they promote behavior changes in students' natural environments. Thus, the issue of instructional effectiveness in secondary programs is closely related to the issue of transfer and generalization of behavior change (Stokes and Baer, 1977) Several implications for instructional methods follow from this concern for generalization. First, instruction should either occur totally in natural environments or else provide opportunity for considerable practice in those environments where performance is expected. A significant proportion of school time should be spent in learning experiences outside the classroom in living, working, and leisure environments. Second, the teaching materials and responses required in secondary instruction should reflect the stimuli and behaviors typically encountered in the community. For example, instruction in reading or language skills would be more functional in students' natural environments if it involved reading and discussion of the sports section of the local newspaper than if traditional academic materials were used. A third implication for instructional methods relates to age-appropriateness. The use of materials appropriate to an individual's chronological age not only reflects the normalization ideology, but also increases the likelihood that similar materials or events will be present in the student's natural environment.

A frequent response of the schools to the need to effect behavioral changes in the non-school environments has been to simulate community settings. Classroom workshops, stores, kitchens, and entire apartments have been designed to simulate the environments in which students actually live, work, and shop. Certainly, creation of these environments provides administrative convenience, since instruction in each student's home, neighborhood, or prospective place of employment would be costly and time-consuming. However, such simulation has recently come under attack, because competence in these environments does not necessarily produce competence in settings where independence is ultimately needed (Brown, Nietupski, and Hamre-Nietupski, 1976). Rather than supporting either extreme of this debate, the program qualities proposed here suggest some guidelines and conditions for simulating community environments and events:

1. Simulation may provide an efficient strategy for initial steps of instruction on community skills, but cannot substitute for later instruction and practice

in natural settings. Simulation that is intended to substitute for instructional experiences and supervised practice in natural settings should be avoided.

2. Simulation is useful when community events to which students must respond appropriately occur so infrequently that experience in natural settings will not usually provide needed instruction. This use is analagous to flight simulations in pilot training, where infrequent weather and mechanical events can be routinely practiced.

3. Simulation may be useful to ensure that response opportunities during instruction sample the full variation in stimuli and criteria that are likely to be present in natural settings.

Program Administration and Support

To achieve the qualities advocated here, secondary level services require administrative support that is significantly different from that typically provided in elementary and early childhood programs for severely handicapped students. Most important among these differences are support for instruction outside the classroom, funding of time for local curriculum development, and provision of different professional services.

Providing instruction outside the classroom is frequently impossible under administrative arrangements that have evolved in services to younger children. The combination of insurance restrictions, parental permission requests, transportation needs, classroom coverage requirements, and professional liability issues could quickly reduce the best intentions for practical programming to a regiment of classroom simulation. Leadership is clearly needed from school district administration to establish standard procedures that encourage, rather than discourage, effective programming.

Time for local curriculum development is also critical. While the utility of packaged and commercially available materials and skill sequences appears limited at the secondary level, the need for appropriate materials and instructional sequences remains. To develop locally useful curricula, administrators should provide teachers time and resources for conducting local inventories of environmental requirements and developing corresponding training objectives. A useful strategy is to use a one-to-two-week summer work session to develop skill sequences in areas prioritized in spring IEP meetings.

Support services provided to secondary classrooms should also be different from those typically available in early childhood and elementary services. Rather than utilizing speech or language therapists, occupational therapists, or content area specialists, secondary teachers would better be provided assistance from individuals who can assist in community-based training. Direct assistance is needed not only in skill training, but also in the support of specialists in vocational preparation, job placement, and residential living often critical to successful instruction.

Advocacy for Adult Services

A final implication of the qualities advocated here for secondary programs is the importance of adult services. Since participation in normal community settings is the ultimate objective of preparation and transition services in the schools, adult services in the community will have much to do with the final success of secondary programs.

Adult services for individuals with autism and other severe handicaps lack several features that now characterize public education. There is no single generic agency responsible and accountable for service provision. Rather, different vocational, residential, medical, and welfare services are administered by different agencies with different criteria for access and different standards of quality. A particularly important problem with adult services today is the lack of entitlement to the vocational and residential services that often are critical in preventing institutionalization. Long waiting lists for community programs are not uncommon, and in many states there is little recourse when a local agency refuses services.

Even when community services are available to severely handicapped adults, the appropriateness of those services must be scrutinized. Day care and activity programs today substitute for vocational support for more than 100,000 severely handicapped adults (Bellamy, Sheehan, Horner, and Boles, 1980).

To increase the likelihood that severely handicapped students will have access to needed community services after leaving school, secondary programs should maintain a posture of advocacy, both for individual student opportunities and for broader systems change. Early referral to and coordination with existing adult services may facilitate individual services, as may specific training in skills desired by service settings. At the service system level, schools can assist in developing needed change by keeping parents and advocates informed of actual local opportunities, demonstrating through exemplary instruction that lack of vocational or community living success should not be attributed to the individual's disabilities, and by participation in efforts to secure funds for appropriate programs.

CONCLUSION

The last decade has witnessed rapid, substantial advancement in educational services for severely handicapped individuals. The bulk of this program development effort has focused on early intervention and elementary programs, and a variety of models are now available to help schools serve these age groups. Similar progress is not yet reflected in the development of secondary-level services, and local educational agencies now face expanding secondary service needs with little direction from professional research and writing.

The program qualities advocated in this paper suggest that secondary-level severely handicapped students will be ill-served if techniques and models developed for younger children are directly applied to meet the needs of adolescents. If the qualities are to be realized, significant change is needed in classroom operation, program administration, teacher preparation, and governmental regulation. To promote this change, a federal investment is needed in both program development and research to identify practices and models that lead to an effective transition from school to competent adult living.

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ISSUES IN THE PROVISION OF COMMUNITY SERVICES

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There is increasing demand for the assurance that children and youth with severe handicaps, including autism, have access to a full range of community-based services that will assist them to function at their highest level in the community. It is the present position that existing knowledge about the severely handicapped population and increases in service technology, combined with consumer power, demand a new model to ensure the development and full access to a broad range of community services. This chapter examines the problems of the traditional community service system and describes in detail an alternative program model.

The term "community services" is frequently interpreted to include only social services, such as welfare benefits, day care, personal and family counseling, and homemaking services. However, it is more functional to use the term "community-based services" to indicate a broader range of service systems in the community, e.g., social or welfare services, health services, education services, and other generic community services such as housing, recreation, employment training and placement, transportation, and information services. Many of these services should be thought of as public social utilities (Kahn, 1973) since they are generally available to everyone. In the history of efforts to assist people with severe handicaps, there has been an unfortunate tendency to develop segregated services that do not access the spectrum of community-based services available to all citizens. It is now clear that this segregation itself becomes a handicapping condition that prevents individuals' preparation to function in the normal community and decreases the opportunities for them to do so. Further, where there are segregated services, the community itself is not pushed to make conditions more favorable for the integration of citizens with handicaps.

Access to community-based services has been a problem historically. While many community services and social utilities have been called "available" for use by all citizens, a large proportion of people with severe handicaps have been denied access to them. Among the many factors that must be considered to ensure that the individual with autism has access to community-based services, there are two issues that are perhaps more basic than the others. On the one hand, one must ask what supports or prosthetics are needed to help the individual to utilize those services that exist in the ongoing community. On the other hand, one must ask what can be done to make the community and its various service systems capable of extending their benefits to people with handicaps.

Those services that we generally define as social services should be viewed as ancillary to social institutions in the sense that they help other institutions to do their job. These institutions can include the family, education, the law, and so forth. Rein (1970) identifies four tasks of social services: (a) preparation for using social institutions, (b) procurement of necessities, (c) protection from abuse, and (d) provision of goods or services. It is clear that all these tasks are crucial elements of services to children and youth with autism or other severely handicapping conditions. However, the unique and often difficult characteristics of this population have frequently led to an emphasis on the provision of special goods and services to the relative neglect of necessary considerations. The development of the total service system of the large state hospital, the mini-institution, or the institution-like service system that often develops in the community reflect the extreme goods and services orientation. While it is generally recognized that provision of services is necessary, it is important to note that providing new services often predominates over the possibility of obtaining or forcing access to existing community-based services. Access can mean a very major change in all components of the service system, since it often requires that power be put in the hands of individual consumers and their advocates. If the consumer has power, there is great potential for individualized treatment and accountability of service providers to those at the receiving end. Behaviorally structured educational programs have been most helpful to individuals with autism. Supportive programs involving sensory stimulation, speech and physical therapies, and behavior modification have helped to keep many such children in the home and in the community. It is recognized that most individuals with autism need structure and an organized regime to function satisfactorily. However, progress varies widely and inexplicable regression has been noted in many instances. Autism still presents many puzzles that do not seem to have ready solutions.

Individuals with autism can be expected to have a normal life span, during two-thirds of which they will be adults. An alarmingly large proportion of adults with autism has been institutionalized and this attests to the very limited success of community initiatives on their behalf. Although it is fair to say that children and youth with autism and autistic-like behavior have tended to be absorbed to some degree in community services (schools, developmental programs, home support services), the question that remains is: "What happens when eligibility for children's services runs out?". It can be argued that many of the programs for which a child or adolescent is eligible are highly specialized and do not assist with the transition into adulthood. Most usually, they are segregated programs that do not lead into the generic system of community-based services. However, it can be argued that those generic systems do not have the capacity to provide services to individuals with such a severe disabling condition. Access to a non-segregating community-based service system for children and adults with autism must be ensured if the institutional sentence is to be avoided. Children and youth with autism present a difficult challenge to the community-based service system, a challenge that becomes even greater in the context of the current ideology of normalization and the goal of community living for all citizens with severe handicaps.

One of the general anomalies of the existing family and children's services system in North America is the propensity of the state to offer substantial financial resources to remove a child from the family home, while offering little or no support to maintain the child in that home. Families too often have to resort to large, remote institutions for assistance when support in the community is not forthcoming. This particular dilemma faces not only families with an individual having severe disabilities but virtually any family in which a child is at risk. As a result, the amount of public financial support for institutional care for children with severe handicaps in North America is astoundingly high. Support for community-based services to assist these same populations is astoundingly low. When the quality of institutional care is related to the cost of home care, the question that immediately emerges is: "Could the child not be better served in his own home (or at least in a community setting) with the money that is spent for institutional care that rarely goes beyond custodial services?". It is from this position that many parents are actively promoting the return to the community of many of their sons and daughters with severe handicaps. The consumer movement should assist families, particularly parents, to realize their goal.

Until well into the last decade, parents continually found much lacking in community support services. While developments in community-based services for people with autism have not been particularly remarkable, there is truly cause for optimism among both consumers and professionals. In essence, training technologies and innovative support approaches, combined with a greater interest in human rights issues for people with handicaps, have stimulated increased exploration in community living experiments. In broad terms, the objectives include not only such basic matters as safety and security, but realistic preparation for community life.

THE SUPPLY SIDE OF EDUCATION: COMMUNITY-BASED SERVICES

A community-based service system can be described as the organizational arrangements among suppliers and consumers (demanders) of community services for the support and development of people in need. The suppliers or distributors include public and private agencies, individual professionals and groups, and non-professional individuals and groups, including consumers themselves who in some instances participate in service delivery. For families of children with autism or other severely handicapping conditions, services in five major areas are needed:

1. A range of assessment capabilities;

2. A range of home and environmental services;

3. A range of overnight, vocational, educational, and

4. A range of therapies and training services; and

5. Miscellaneous services to ensure access to the community and community-based services.

This range of services had the potential for supporting the individual to live in the community within the family unit or separate from it. Some services involve preparation, procurement, and protection, while others are actually services that may substitute for the family and the home. It is critical to ensure that access to generic community services is promoted whether by means of special supports to the individual or to the generic services themselves.

Service Listing

Descriptions of comprehensive community services for those with severe handicaps have been presented by Scheerenberger (1976), Larsen (1977), Fanning (1976), Kenowitz and Edgar (1977), and others. Chart 1 presents an adaptation from a service listing developed by Eleanor Roosevelt Development Services in Albany, New York (1976), and is used for its breadth. No one organization could or should offer all these services. No individual requires all services, although the range of strengths and vulnerabilities displayed by children and youth with severe handicaps underlines the need for an extensive array of options.

Community-Based Services

It is important to take into account the usual criticisms of community-based services that have captured the attention of many consumers and suppliers alike. It has been generally agreed that in North America, community or social services have been fragmented, discontinuous, inaccessible, unaccountable, and inflexible to varying degrees. Fragmentation is perhaps the most common criticism of the delivery system. The problem is

Chart 1
Range of Services for Individuals
with
Severe Handicaps

Assessment Capabilities

Vocational
Educational
Social
Medical
Neurological
Vision
Speech and hearing
Dental
Nutritional
Psychiatric
Psychological
Physical
Occupational
Recreational

Home and Environmental Services

Family Therapy
Marital and Pre-marital Counselling
Personal Counselling
Home Management Training
In-home Respite Services
Out-of-home Respite Services
Nursing Care at Home
Financial Counselling
Nutritional Counselling
Self-Care Training
Sex Education
Genetic Counselling
Behaviour Management Consultation

Overnight Services

A. Independent Living
    Living alone (Adult)
    Cooperative Apartment
    Boarding Home
B. Family-Type Living
    Home with Immediate Family
    Other Relatives or Friend's Home
    Family Care Home (Fostering)
C. Structured Living
    Supervised Apartment
    Adult Training Home
    Children's Training Home
    Children's Group Home
    Core Developmental Training Residence
    Private Residential Facility
    Crisis and Respite Care
D. Other Facility
    General Hospital
        Public or Private Facility

Vocational Services

Vocational Counselling
Vocational Training
- Work Training
- On-the-Job Training
- Short-Term Workshop

Job Placement and Follow Up
Independent Employment
Sheltered Employment
Activity Centre (minimal work)

Educational Services

Pre-School Educational Programme
Regular Educational Programme
Special Educational Programme
Tutoring
Life and Social Skills Training Services
Infant Development Services

Therapies - Treatments

Physical Therapy
Occupational Therapy
Social-Recreational Activities
Medical Treatment, Inpatient
Non-surgical
Medical Treatment, Inpatient/Surgical
Medical Treatment, Outpatient
Dental Treatment
Vision Treatment
Speech and Hearing Therapy
Psychiatric Therapy
Psychological Therapy

Socio-Recreational Services

One-to-One Volunteer
Advocacy Programme
Activity Centre
Camping
Sporting Events (Spectator and Participating)
Parties, dances
Creative Activities
Church Going
Religious Classes
Social Activities

Miscellaneous Service

Individual Service Coordination (Brokerage)
Legal Service
Transportation
Financial Assistance
Information Services

typified by the individual in need who has to go from one agency to another receiving a bit of service here and a bit of service there to meet his or her needs. Discontinuity is best defined as the service that takes the individual so far and then stops helping him, although the problem may not have been fully addressed. Inaccessibility is most often thought of as a problem of eligibility for service. The applicant may be too young or too old; too handicapped or not handicapped enough; or come from the wrong county to receive a particular service. Unaccountability is best illustrated by the situation in which a consumer is unable to find a suitable means for addressing grievances within the service system. Families with severely handicapped children have lived with these problems for years. Community-based services cannot be fully effective until these problems are minimized.

The solution to many of these problems often conflicts with one or more of the others. For example, an increase in accountability (a positive outcome) can lead to increased fragmentation (a negative outcome). A reduction in fragmentation and discontinuity can simultaneously decrease accountability and accessibility. Consumer frustration engendered by such realities has led to experimentation with a number of models of service delivery. Attempts have been made to correct inadequacies by means of citizen participation (Arnstein, 1969), coordination (Clark, 1965), integration of services (Kaplan, Gans, and Kahn, 1972), purposive duplication (Landau, 1969), and development of new means of access (Kahn, 1970).

The institutional model is being rejected more and more by parents of children and youth with severe handicaps, particularly by those who have some involvement with the consumer movement. However, these same citizens have experienced many problems in attempting to utilize community-based services. The "referral go round" that they have run into has proven to be frustrating and the community "mini-institution" in which a residential program attempts to provide everything from school to sheltered workshop to recreational programs in one setting has been only a slight improvement over the large remote institution. Consumers are now insisting that there must be a capacity in community-based services to tailor-make programs to meet individual requirements. In this respect they are dealing with questions of coordination on an individual basis as well as at the systems level. There is increasing recognition that something is needed to ensure access to service structures with a variety of different supports to assist in the "preparation" and "protection" dimensions of service delivery.

Technology: The State of the Art

The difficulty of working with the population of autistic children and youth cannot be underestimated. However, there is recognition that the developmental model and programs involving behavior modification have had success in increasing competencies and decreasing vulnerabilities. With respect to utilizing the community-based service system, perhaps the most potentially important technological advance is individualized planning. Public Law 94-142, of course, has had a varying impact on educational planning. Programs using federal monies through the Developmental Disabilities Councils are required to have individual habilitation plans developed for each person in receipt of services. The importance of individual habilitation planning, individualized education programs, and individual program planning is that coordination on an individual basis has a higher likelihood of taking place. Individualized plans should lead to clear expectations and prescriptions across the range of service providers. This unfortunately is not the rule.

With respect to technology, a critical element is the matter of suitably trained service providers. This whole area calls for ongoing training and staff development of professionals and paraprofessionals involved in the delivery of services to children and youth with severe handicaps. It means that generic service suppliers will need extensive training and consultation to do their job. If the YMCA's are expected to include children with autism, they will need strong support by way of training and consultation.

Some problems with new technology will relate to the overall program and policy structure that should be the underpinning for a community-based services system. It is not unfair in this field to say that often technology is in search of programs and programs are in search of policies. Sadly, there does not seem to be agreement in policy with respect to community-based services for people with severe handicaps. As a result, funding mechanisms are frequently inappropriate and not necessarily supportive of consumer wishes or the application of new approaches to service provision. Often funding can be category or group oriented with no real recognition of individual requirements. Funding can take a custodial orientation rather than a developmental one if inadequate recognition is given to the need for trained staff to deliver sophisticated programs. As mentioned previously, funding criteria can be designed to take the child away from the family and out of the community. Worse, institutions are usually funded (apparently permanently) at the highest level and community services often on a "project" or "pilot" basis. These funding problems frequently lead to the use of inadequate and inappropriate services for individuals whether in the institution or the community. The planning of community-based services is criticized for being subject to disjointed incrementalism. Generally, this can be attributed to a lack of vision on the part of funding bodies, stemming from an inability to listen to consumers and from archaic funding policies that have failed to keep pace with technological advances.

CONSUMER POWER

The demand side of the service equation posed earlier involves the consumer who is the individual with the handicapping condition and his or her family. In this sense, the very needs expressed by the consumer constitute "demand" on the system of supply. Perhaps it is unfair to say that the expectations of parents were generally ignored by professionals in the past; at any rate, there does seem to be a sudden sensitivity on the part of professionals to the views and wishes of parents and consumers. Frankly, this seems to be directly in proportion to the growth of the consumer movement and increasing confidence in its beliefs and values. The resulting power has the potential for influencing community attitudes and changing public policy.

The consumer movement is not represented by one organization but involves brothers and sisters, parents, professionals, and interested citizens. Clearly, part of the mission is directed toward community involvement, awareness, and acceptance. Consumers also lobby for change as "corporate advocates" (Wolfensberger, 1972) in an arena where national organizations lobby for legislation, research, and service. It appears that one of the most important roles of those in the consumer movement is that of personal advocacy and monitoring of the well-being of the individual. This requires the careful scrutiny of what happens to the individual in the service system and advocacy on his or her behalf. In effect, this can become the greatest safeguard for the professional to the extent that direct accountability to consumers is expected of the professional and the total program. This accountability is greatly enhanced by a requirement that the family of the individual with a handicap be involved in program planning and, occasionally, in program delivery as well. Parents, however, want first and foremost to be parents, which naturally involves some advocacy and some service provision.

The consumer movement has always recognized the importance of advocacy on behalf of the individual. Many families are beginning to recognize that, while they view themselves as advocates for the person with a handicap in their family, there is still a need for an advocate for that individual outside the family. Checks and balances are needed to protect the individual with a handicap even in the most caring of family circumstances.

While improvements in technology and delivery mechanisms will come by means of research and demonstration, it seems fair to state that the major element that will promote change and improvement in the lives of individuals with severe handicaps will be the consumer movement. Indeed, this is in the public interest.

The Ideological Base

At the foundation of the consumer movement is a developing ideology based on the normalization principle. This principle, originally formulated in Sweden by Nirje (1969) and later developed by Wolfensberger (1972) in the United States, holds that individuals with handicaps should experience the normal rhythms of the day and live in as culturally normative circumstances as possible. Following from this principle is the notion that people with handicaps should be fully integrated in society. The consumer movement has embraced the normalization principle to a significant degree and one logical commitment has been to the concept of community living as opposed to institutional living. While it is important to recognize that the consumer movement is not a completely cohesive force by any means, a broad ideological base is emerging that is derived from the normalization principle. This base is best described as the expectations that consumers hold for community-based services.

Most of the items within this base are interconnected and should not be considered in isolation. Consumers, particularly the parents themselves, feel that the "state of art" with respect to technology and organization of service delivery is at a level of maturity that renders these principles, characteristics, or expectations not unreasonable. The following points are included in the ideological base for community-based sources (Woodlands Parent Group, 1977):

1. The individual must be the focus. It is the individual person with the handicapping condition, not the group or a category or a class of people, upon whom policies, programs, and particularly plans must focus.

2. The individual must live in the most normal circumstances in the community lifelong. Institutional placement is unacceptable and only serves to underscore the failure of public policy.

3. There must be a fixed point of responsibility with respect to the individual's service plan. Fragmentation of the system and failure of accountability cannot be tolerated. A broker or agent that is responsible to the individual must assist the individual in planning and obtaining services. The "buck stops" at this agent with respect to any difficulties an individual experiences with the system.

4. There must be monitoring of the individual's circumstances and the quality of service by a monitor(s) who is independent of the service system.

5. Comprehensive community-based services are essential. The services must meet the needs of all age groups and cope with all degrees of disability. Also, the services are available when needed and where needed by the individual or family.

6. Community-based services must be of good quality, not just better than institutional services.

7. Services must be accessible and inclusive, not exclusive.

8. Services must be age-appropriate and sensitive to the changing requirements of individuals.

9. Services must be participatory at every stage wherein the family and advocates are included in planning, monitoring, and, to some extent, delivery of service.

10. Services must be accountable to the consumer as well as to public authorities.

Stated another way, representatives of the consumer movement have talked about the importance of ensuring that individuals are (Woodlands Parent Group, 1977):

1. Treated with respect;

2. Not labelled unnecessarily and not in a devaluing way;

3. Eligible for the same rights as nonhandicapped persons;

4. Able to receive support services without being segregated;

5. Enabled to access developmental opportunities as well as basic needs care;

6. Close to nonhandicapped age peers to learn with them;

7. Enabled to work near nonhandicapped persons or with them;

8. Enabled to live in ordinary housing near or with nonhandicapped persons; and

9. Enabled to live in small groups no larger than the regular sized family.

Some consumer groups have advocated the redistribution of financial resources from institutions to the community. This initiative has been based on a recognition that gigantic amounts of public funds have been spent for institutional care on systems maintenance rather than individual development. That is, funding for institutions, while intended to benefit individuals, tends to relate less and less to the needs of consumers and more to perpetuating the structure of services. One very interesting argument that will be discussed later is that funding should be "tied" to the individual and follow the individual upon leaving the institution.

Another result of the ideological base developed by the consumer movement is a challenge to what consumers refer to as the professional and bureaucratic preoccupation with "ownership" of the client. The concern is that professionals, either in obtaining or providing services to individuals, often display an aura of total control over the individual and frequently the family (Illich, Zola, McKnight, Kaplan, and Shaiken, 1978). Consumers are insisting that professionals and organizations recognize that their role is assisting in the process that enables the individual to function at his best in the community. The question is whether professionals can pay more than lip service to this expectation.

The ideology of the consumer movement, though not yet fully articulated, challenges the community-based service system in a very significant way. Clearly this challenge leads to increased complexity in the delivery system and has very definite implications for models of service delivery.

A MODEL FOR COMMUNITY SERVICES

Taking into account the current understanding of the needs of the population of children and youth with autism and other severe handicaps, the problems and history of community-based services, the development of sophisticated technology for serving these individuals, the growth of consumer power, and the ideological base supporting this growth, it is desirable to propose a model responsive to these factors. At the core of this model there must be the ideological base being promoted by consumers. The crucial features of this ideology include normalization, individualization, comprehensiveness, a fixed point of responsibility, and independent monitoring. That is to say that consumer expectations include not only "what" is expected, but "how" it is to be done.

Ideally, the community-based service system should be made up of four separate but inter-related components. These include an individual service brokerage capability, a planning and resource development capability, a service delivery capability, and a monitoring capability. Each component is intended to act as a check or balance on the others. For example, the monitoring component checks the other three components, most particularly the service delivery and service brokerage components, by acting in an advocacy and evaluative fashion. The service brokerage component provides data to the planning and resource component with respect to gaps, actual needs, discontinuities, and so forth. The planning and resource component monitors all plans and working agreements and, as such, serves as the focal point for planning and development of resources. The service brokerage component utilizes the service delivery component, obtaining services to the extent that it is deemed capable of providing the quality of services required. This service delivery component should include the range of services that has been previously described. The individual service brokerage component must emphasize:

1. Access for all citizens who are severely handicapped and their families by acting as their chosen agent;

2. Individual habilitation plans for all persons involved in receiving services and individual program plans with respect to each service;

3. Opportunity to graduate to appropriate services;

4. Prevention of institutionalization;

5. Opportunities for those in institutions to live in the community.

This brokerage component must act as the fixed point of responsibility. Working as an agent with a mandate given by the individual, the brokerage component takes responsibility for procuring services (i.e., access) and, in the course of finding a pathway through the service maze, must accept responsibility for the arrangements made. Thus, individual program planning with respect to any and every service obtained for the individual is a basic safeguard.

There is considerable debate as to who should act as the agent or broker. Ideally, the individual consumer or his parents should "walk" through the community-based service system as a service broker. However, teachers often believe it is a natural role for them. Residential service providers see it as their role, while state government social services staff assume it should be their role. The factor in assigning the brokerage roles, however, is the avoidance of conflict of interest. The service broker or agent must be independent of service provision insofar as the role requires that selection and rejection of suppliers must be made. Teachers, residential service staff, and state social services staff are providers and in those roles would be in conflict of interest with the independent advocate broker. The broker is actually selected by, assigned to, or hired by the individual consumer and must assume a professional role like that of an architect, lawyer, or personal physician. Therefore, the creation of an individual brokerage not-for-profit corporation is recommended. The service broker then can relate to teachers, residential service staff, and state government social workers as well as other providers, to procure services in the course of designing and implementing the individual habilitation plan. Potential for conflict of interest is minimized in that the service broker provides representation and access to community-based services in behalf of the individual.

Ideally, the funding formula for community-based services should be directly related to the individual. For example, the voucher system which has been proposed in relation to public education and social services (Reid, 1972) has real potential in responding to the ideological concerns of the consumer movement. If the individual is allocated a voucher or "credit card" for purchasing services throughout a community-based services system (with the aid of a service broker if necessary), it should be possible to negotiate access on a very different basis. This should offer greater potential for individualization as well as greater accountability. Also, it might be found that, with those agencies or providers that do not have a fee-for-service structure, purchasing the assistance of a one-to-one worker or attendant to help the individual utilize the particular agency service being offered would suffice. For example, an attendant for two hours could assist the individual to use the YMCA or the public transportation system in many cases.

It must be the responsibility of the service broker to ensure that the planning on behalf of the individual's needs is comprehensive. In obtaining access to the various service delivery agencies, it will be necessary for the broker to ensure that arrangements are coordinated among residential services, educational and vocational services, leisure time activities, and other support services that are necessary to develop and maintain the functioning of the individual. Since the comprehensiveness of a program must also relate to a time factor, it may be useful to engage planning around three modules: the day module, the evening and weekend module, and the overnight module. All of these time modules should take into account the normal rhythms of the day. In essence, it must be expected that the individual's day program is a full program which would usually be related to education or work-oriented activities. Evening and weekend programs usually relate to leisure time activities which under the most usual conditions are only partly done within the person's residence. The overnight module is the residential setting or the place where the individual sleeps. This particular framework for viewing comprehensive programming in its relationship to time allows the planner to avoid overconcentrating on the residential circumstances of the individual. Concentration on housing arrangements has often led to a community institutional model of service where almost everything is done for the consumer.

Once the service components are functioning together, the most critical part of the model is that of monitoring. It is critical that monitoring be done by an agent or advocate(s) separate from the service or brokerage system. In this respect, there must be no conflict of interest in terms of the monitor safeguarding the interests of the individual. Monitors must have status and should be trained to function within that role having access to various tools for monitoring. This might include Program Analysis of Service Systems (Wolfensberger and Glenn, 1973) for large-scale analysis of the effectiveness of the community service system. However, the major steps of the monitor will be involvement in the planning process in behalf of the individual and ongoing interest and scrutiny of what happens as the services are received by the individual. As such, the monitor must have access to information and facts and, most importantly, the individual.

Model community-based service systems must include a planning and resource development capability. This is essential insofar as many of the criticisms of the service system that have been discussed previously relate to a weakness in coordinated planning at the systems level. It can be argued that this planning and resource development capability must have a powerful mandate from the funding authorities (namely the state) to engage in planning for the coordination, improvement, and expansion of the community-based service system (National Institute on Mental Retardation, 1974). However, it is even more important to recognize that there must be something to facilitate the development of working agreements among service providers and to clearly identify areas of need that must be addressed.

A Working Model of a Community-Based Service System

The model to be described in this section has evolved as a result of the effort of a consumer group, the Woodlands Parent Group, based in Vancouver, British Columbia, Canada. The group consists of over 300 members with an active core of 20 families. These parents have children of all ages and disabilities who reside in a large institution. This institution, the Woodlands School, houses up to 900 persons and has been in existence for over a hundred years. Having come together as a splinter group outside the organized provincial associations for autistic or retarded citizens, the Woodlands Parents Group based its social action efforts on the ideology presented above and reflected a total frustration with both institutional and existing community service systems. To a great extent, they felt that the provincial consumer organizations had not addressed their concerns. Gradually, assistance from a variety of organizations was drawn into the thrust for change spearheaded by this group of parents.

The Woodlands Parent Group realized that their children had been rejected by the school system as well as the community-based social and health services system, resulting in institutional placement. They considered institutions and, in fact, many community-based services, as antithetical to individuality and hardly conducive to the development of the child. Their response to these concerns and frustrations was to organize consumers and advocates with a view to clearly designing alternatives to the existing state of affairs and gradually building up pressure on government and service delivery authorities. Drawing on consultative assistance from across the United States and Canada, they refined their strong ideological base and designed a community service model for ensuring that their sons and daughters with autism, mental retardation, cerebral palsy, and a host of other developmental disabilities could live in the most normal circumstances in the community (Woodlands Parent Group, 1977). Translating their ideology into action has required continuous attention and dedication.

In putting pressure on the provincial authorities, these parents challenged the government to make funding available to the child or adult leaving the institution at the same average level that would be used for the individual's care in the institution. They demanded that the individual would have at his disposal a theoretical "credit card" which could be used to purchase services in the community. They also demanded that the individual have at his disposal an agent or broker, independent of government and the service system, who could walk the individual through the system ensuring that appropriate services were obtained to meet the individual's needs as defined by the individual habilitation plan. Parents recognized that coordinated comprehensive planning that focused on the individual would involve schools, vocational training facilities, social service providers, community recreation providers, housing and transportation authorities, and, most important, the individual and family. It was felt that the only means for accomplishing this would be the assistance of an agent or service broker, responsible to the individual, who could identify need and then negotiate, obtain services, and implement the individual's plan. The parents also insisted that members of their own group and government personnel jointly monitor the well-being of the individual and the quality of services delivered.

Following lengthy negotiations, the Ministry of Human Resources in British Columbia supported the notion that the model proposed by the parents should be implemented on an experimental basis to evaluate its viability. While not endorsing the model as the only pathway for leaving the institution, it recognized that the model had potential for breaking new ground in community living options. Initially, it was agreed that a limited number of individuals would be assisted in leaving the institution or prevented from entering it by means of this parent-designed model and would have available to them funding equivalent to the average cost of care in the institution as of 1976 ($18,000 per year). In November of 1978, funding was made available for fifteen adults and up to ten children. It must be pointed out that, typically, funding arrangements for adult and children's services differ somewhat, though funding under the experimental model has been relatively equal. It was believed, quite correctly, that the funding mechanism and applications would evolve and improve over time if the approach proved to be workable. The amount of funding available per individual was deemed to be an average, in that some individuals with the most severe handicaps would likely require extra resources by way of costly specialization and intensity of service. It is important to stress that not all services would have to be purchased for the individual. Often, what is necessary is some form of support to enable the person with the handicap to use what is available for everyone in the community. Therefore, it was expected by the provincial government that approximately half the money available to the individual would be used for basic needs such as housing, food, clothing, transportation, and health services (provided by means of a provincial health plan). The remaining portion of available money would be directed, in the main, to the development of the individual's functioning. To ensure that the principle of individualization was adhered to, it was agreed that flexibility in the use of funds to implement individual habilitation plans would be the rule rather than the exception.

While one of the obvious costs of the model would be payment for the service broker, the Ministry of Human Resources agreed that these costs should be viewed as separate administration costs and not charged to the individual during the service model's formative period. Also, it was determined in the beginning stage not to remove funds from the institution as residents were re-established in the community. In light of this latter decision, "New" money had to be allocated to initiate this program. The Woodlands Parent Group, however, is continuing its challenge to the provincial government to phase down the large institutions by dispersing the funding base to the community with individual residents.

At this point in time, this consumer-designed model is not universally available in the province of British Columbia. The size of the program has been influenced by the fact that many parents of institutional residents were skeptical of its viability. As a result, over a 15-month period only 65 individuals have been referred, most by institutional staff. Furthermore, program advertising by the Woodlands Parent Group and the government has been cautious inasmuch as there is a great deal to prove in comparing the underlying principles and the outcomes for individuals.

To take responsibility for implementing this community-based model, the parents were able to convince interested citizens in the Vancouver area to incorporate a not-for-profit society called the Community Living Board (CLB) to contract with the provincial government to function as a service broker. The parents, who maintain a separate advocacy organization, believe it is crucial to have a community board to perform the role of service broker for a number of reasons. First, it appears to have the most potential for being free of conflict of interest and has no restrictions as to what it can relate in behalf of the individual. Second, community responsibility should lead to a supportive community response. If government "lays it on," the program is unlikely to succeed in the face of community resentment. Third, close monitoring of the service broker, which is part of the terms of reference, is essential and there is a greater likelihood of access to a community-controlled body than a government department.

In functioning as the service broker for individuals, the Community Living Board must view each consumer as having an average "credit line" of $18,000 per year. All monies made available to the Board for purchasing service are accounted for, by individual, and the service broker acts as trustee for each individual's funds. After nearly two years of operation, the fact that some individuals with the most severe handicaps require more services has not proven to be a problem. Since there have been enough consumers who have required far less than the amount of the cost of care in the institution, additional funds are available for those requiring the most service. Clearly, however, this looms as a major policy consideration for government as it is shown that people with autism and other severe handicaps can function satisfactorily in the community with appropriate supports. These supports will cost money; there must be a willingness to redistribute institutional resources to the community if there is a true commitment to community living.

In relation to families and the individual consumer, the CLE is a fixed point of responsibility. That is, if there are any problems with respect to the well-being or functioning of the individual, the family or advocate directs its questions, inquiries, or criticisms to the Community Living Board which then take steps to investigate and rectify problems. Thus, the service provider is not making the decisions about the consumer unilaterally, but in collaboration with the consumer and the service broker.

The Community Living Board is expected to "tailor-make" or design programs for individuals if appropriate services are not available. This requirement is part of the parents' concern that, all too often, individuals are forced to "fit" into programs rather than vice versa.

To ensure that new community resources are developed, the Board is working with a range of community agencies to develop a planning system that will take into account the refinement of new technologies, the need for changes in existing services and the development of additional resources to fill gaps. Often the development of new resources will be based on findings of service brokers as they discover shortcomings in the attempt to obtain a comprehensive array of services for each individual with a handicap.

Monitoring by the Woodlands Parent Group itself and the provincial government is continuous and intensive. A detailed evaluation of the first eleven individuals served by this model has shown an overall effectiveness rating of 80 percent (Neufeld, DeHaan, Vickers, and Shillington, 1979). Recently, a Program Analysis of Service Systems (PASS) evaluation was completed on a number of resources developed within the model and the results have been used to upgrade services.

With respect to implementation, individuals with mental retardation, autism, or autistic-like behaviors have been supported in their family home or have resided in alternative living arrangements including foster care or small (3-person) staffed group homes. Special classes in the school system have been utilized and often augmented by trained one-to-one attendants. Social development programs designed for the individual have been purchased from various service suppliers. The significance of having the funding tied to the individual is that staff supports are actually paid for directly by the service broker on behalf of the consumer. Generic recreation programs are utilized with individualized supports. Work experience arrangements have been developed with private employers, again with individualized supports. Sheltered work placements have been made with individual support workers provided to assist if necessary. Specialized staff development programs have been designed to assist service suppliers to meet program standards. Also, new community resources have been developed through the collaborative efforts of the Community Living Board, the Ministry of Human Resources, and service delivery organizations. These include a variety of housing alternatives and vocational training programs for consumers with the most severe handicaps. At this time, the Community Living Board has established 38 handicapped children and adults in the community. Thirty-two of the group were returned from an institutional placement while, for six individuals, the services brokered by the CLB prevented institutional placement. The Community Living Board with a staff of eight professionals monitors those individuals who have been established in the community and brokers for another 25 individuals whose program and services are being established.

The Woodlands Parent Group is convinced that the CLB brokerage model is proving its effectiveness. It represents an excellent example of the ability of consumers to force community service providers and policy makers to be responsive to a particular ideological base and to ensure access by all individuals with autism or other developmental disabilities. While these consumers recognize that all facets of their ideology have not been fully translated into practice, they have learned that their major strength is in expressing principles and expectations and monitoring the process and outcomes as they pertain to the individual. More important, they have learned that what appears to be a professional and bureaucratic brotherhood will not change without intensive pressure.

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FUTURE DIRECTIONS IN EDUCATIONAL PLANNING: THE PROBLEM IS THE PROBLEM, AND IT'S REAL

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Before a problem can be addressed, it must first be recognized that a problem exists. Autism, as described in this chapter, has been avoided in an incredible number of ways. The experience of parents with professionals can be summed up in this familar sequence:

- "Don't worry; it's nothing."
- "It's something, but it will go away."
- "It's bad, but it's your fault."
- "We'll try to help, but it will cost you a lot of money."
- "It's emotional disturbance. It's mental retardation. (Why don't you face it?). It's schizophrenia."
- "It's autism, but we don't have any programs..."

It is the purpose of this chapter to show that the problem is real, that the parameters of it are clear, and that there are reasonable things that educators can do to make it less of a problem.

The National Society for Autistic Children was founded in 1965 because children and youth with autism and severe disorders of communication and behavior were being denied education and other human services, and their parents were actually being blamed by a large and powerful body of professionals for causing the distressing disability their children exhibited. Students and practitioners in medicine, mental health, social services, and education were likely to be taught that autism was a rare and strange form of emotional illness, caused by cold and unloving parents who presented their children with such harsh home environments that the infants recoiled with pathological, self-destructive anger, rejecting their cruel world and longing for death (Bettelheim, 1967).

Today, fifteen years later, after much progress in the fields of human services and education for handicapped people, children and young adults with autism still comprise the most homogeneous single group with the least access to adequate human services and appropriate public education in the United States. The result is that between 95 and 98 percent of all adults with autism eventually become institutionalized, regardless of their potential as human beings (Sullivan, 1977).

The National Society for Autistic Children was chartered by the District of Columbia in 1965 as a non-profit association for parents and professionals dedicated to the education and welfare of children and adults with severe disorders of communication and behavior. It has 157 chapters in 48 states, the District of Columbia, and Puerto Rico. The National Society:

- Operates a national clearinghouse for information and a national advocacy center for people with autism and their families (the NSAC Information and Referral Service);
- Holds annual conferences on autism, bringing together parents, teachers, and other professionals in a variety of fields concerned with this disorder;
- Publishes and distributes reviews of the literature, newsletters to members, conference proceedings, informational leaflets, pamphlets, etc;
- Asserts, based on accumulated results of 36 years of research and experience, that autism is a physically-based brain dysfunction with clear and demanding implications in the fields of education and human service delivery, and that parents have nothing to do with etiology, but much to do with prognosis -- primarily as caretakers, teachers, and advocates for their children.

WHAT IS AUTISM?

The most critical issue affecting the education of children and young adults with autism and related communications handicaps is the problem of identification. Both the severity of this disability and the historic confusion surrounding it make it essential to know the parameters of the disability, how many children have it, and its educational significance. The population includes people with autism as described by Kanner (1943) and Rutter (1978), as well as people who are "autistic-like" (Wing, 1979). These two groups include all those described by Ritvo and Freeman (1977; see Appendix A) in the definition adopted by the National Society for Autistic Children, a version of which is included in the Diagnostic and Statistical Manual of the American Psychiatric Association. Most important, we are talking about a group of children and young adults who, because of their behavioral and communicative characteristics, their cognitive difficulties, and their different patters of learning, require carefully structured educational interventions.

Perhaps, as Rutter (1978) suggested, the question ought not to be, "What is autism?", but, rather, "To what set of phenomena shall we apply the term?". Autism is a label used to describe a set of clinical factors, behaviors, or symptoms seen in certain children and adults. The term was first used by Kanner (1943) to describe eleven children with the following behavioral features: (a) inability to develop relationships with people, (b) delay in speech acquisition, (c) non-communicative use of speech after it develops, (d) delayed echolalia, (e) pronoun reversal, (f) repetitive and stereotyped play activities, (g) an obsessive insistence on the maintenance of sameness, (h) lack of imagination, (i) a good rote memory, (j) a normal physical appearance. The use of the term "autism" to describe children with these characteristics was perhaps an unfortunate choice because it was immediately confused with Bleuler's (1911) use of the same word to describe an active withdrawal into fantasy shown by patients with schizophrenia. Ritvo (1976) notes that the term was first used as an adjective to describe a characteristic, but is now used as a noun to name a specific disorder. Wing (1979) observes that a term to include all autistic and autistic-like conditions is necessary, and the word "autism" is coming into wide usage. This suggests that, for practical purposes, its usage could reasonably be expanded. There are, however, a number of points of confusion surrounding the term:

1. Kanner described a failure to develop relationships, not an active withdrawal from them (Bosch, 1970; Wing, 1976).

2. Bleuler's term implies a rich fantasy life, while Kanner's observations suggest a lack of imagination.

3. In the Bleuler sense, the term "autism" suggests a link with schizophrenia in adults. This confusion is compounded by a tendency among child psychiatrists to use childhood schizophrenia, autism, and child psychosis as interchangeable diagnoses (Laufer and Gair, 1969).

The salient issue here is that, while Bleuler was talking about symptoms that were considered to be psychogenic or environmentally induced, Kanner was describing symptoms that could either be environmental or caused by physical brain dysfunction. As Kanner indicated from the outset (1943) and emphasized later (1969), he believed that children with autism have an underlying physical problem that leads to the behavioral characteristics he described. Other prominent investigators (Rimland, 1964; Ornitz and Ritvo, 1976) suggest that autism is a physically based neurological disorder.

Cohen (1978) suggests that the cognitive defects found in children with autism are caused by an imbalance between neuroregulator systems. It is not clear, however, exactly how this imbalance occurs -- through receptor hypersensitivity or through overproduction of certain neurotransmitters, such as serotonin, dopamine, and acetylchlorine. It seems clear that tests consistently indicate certain basic physiological abnormalities and that the balance between neurotransmitters seems to have been disrupted in autistic children. Rimland (1978) notes that, in several studies, children diagnosed as "classically autistic" or "Kanner Syndrome" autistic have shown a markedly high loss of the neurotransmitter serotonin from blood platelets. He adds that serotonin is found in large concentrations in the reticular formation. Coleman (1976) observes that there appears to be a blockage in one of the pathways affecting dopamine in autistic children.

In a careful review, Damasio and Maurer (1978) analyze the behavior and motor disturbances in autistic children. They suggest that the syndrome results from a dysfunction in a system of bilateral neural structures that include the ring of mesolimbic cortex located in the mesial frontal and temporal lobes, the neostriatum and the anterior and medial nuclear groups in the thalamus. Like Cohen, they suggest a neuroregulator or neuromediator imbalance.

It is likely that the syndrome is the result of a number of different causal factors. In fact, Coleman (1976) refers to it in the plural, as "the autistic syndromes." [illegible] work includes a review of literature noting nine metabolic, five infectious, two chromosomal, four structural, and four non-specific disease entities identified in children with symptoms of autism. Of particular interest to professionals interested in the autistic syndromes are the numbers so diagnosed who also are diagnosed as having the metabolic abnormality of phenylketonurai (PKU), an intra-uterine infectious etiology (rubella), celiac disease (Goodwin and Goodwin, 1969), or the sequelae of the infantile spasm syndrome (Taft and Cohen, 1971). Further, Damasio and Maurer (1978) suggest perinatal viral infections (rubella), genetically determined neurochemical abnormalities, and perinatal cardio-respiratory distress, in which hypoxia (oxygen deficiency) can cause damage to specific areas of the brain, including the basal ganglia. Current investigations (Coleman and Gentile, 1980) are probing the possibility that brain damage resulting in autism can be caused by the exposure of parents to certain chemical agents.

In short, the evidence gathered so far indicates that the symptoms that make up the autistic syndrome are caused by a subtle form of brain damage occurring before, during, or shortly after birth, and that this damage is a result of metabolic, infectious, genetic, or other disease activity. There is also a suggestion that chemical insult could result in the same sort of damage to developing brain structures.

Why "Autistic and Related Communications Handicapped"?

For educational purposes, we are concerned with a group of children who do not necessarily exhibit all behavioral features, but who have the following autistic-like characteristics, as paraphrased from Wing (1979):

1. Severe problems in taking part in two-way social interactions: A few will make social approaches in a one-sided or unusual manner, but most will make no approaches at all. Some will accept the approaches of others passively, but most are indifferent, although they might respond positively to tickling or a brief cuddle.

2. Problems with language and communication: All autistic children have trouble understanding and using nonverbal and verbal communication. While many sociable mentally retarded individuals have no spoken language, they do use various nonverbal means to communicate (e.g., facial expression, gestures, vocal intonation, making and breaking eye contact to convey meaning). This is one of the ways they differ from children with autism, who do not use nonverbal means to communicate.

3. Severe impairment in the development of imaginative activities. Autistic children generally do not engage in fantasy play or other imaginative activities. The play of those few who do engage in pretending is characterized by narrowness of theme, repetitiveness, and a concrete, pedantic quality. Activities often consist only of copying the actions of others, and the play tends to remain static for years, resistant to modification by suggestions from others. In the absence of creative and flexible pretending, the autistic or autistic-like child spends his energy on repetitive, stereotyped activities of many kinds, simple and complex, but all lacking in observable purpose or meaning.

The consequence of these problems is that the person concerned cannot organize his own life. Normal people, and even non-autistic retarded people, develop a system of internalized ideas that act as a guide for conduct in diverse situations. Autistic and autistic-like people, because of their impairments, cannot create this inner world of thoughts and ideas. They have no organized system of thinking about past events, interpreting the present, and planning for the future. The only way to help is for others to provide structure and organization from the outside. Even the most able of those with autism or autistic-like conditions are liable to need outside help throughout most or all of their lives (Wing, 1979).

At an educational level, this implies need for a structured, organized environment and systematic intervention. Children with autism cannot learn through free play or interaction in unstructured groups They rarely generalize from one situation to another and, if left alone, revert to aimless wandering or repetitive activities. As the term "autism" is generally applied to behavioral features of a relatively small group of children, the term "autistic and related communications handicapped" is applied to features of a larger group. The three characteristics of children in this group, as described by Wing (1979), each have particular educational implications which, when taken together, point toward the formulation of a homogeneous basic training package for parents, teachers, or anyone who would help these children and youth to use their abilities to the best advantage, toward the goal of a satisfying human existence.

Autism and Mental Retardation

Much has been written about the relationship between autism and mental retardation, and even more has been assumed. Among mental health professionals, low IQ scores by autistic children were often termed "functional" mental retardation, based on the erroneous belief that such children were capable of normal mental functioning, but, because of their "severe emotional disturbance," functioned at a mentally retarded level. Among professionals, children with autism were often classified as mentally retarded, with occasional mention of autistic symptomatology or emotional disturbance. Parents and advocates for children with autism have often been criticized for insisting that there is an educationally significant difference between individuals with autism and those with mental retardation.

Based on a review of empirical work, Ritvo and Freeman (1977) estimate that approximately 60 percent of people with autism have measured IQ's of 70 or more. The majority show extreme variability of intellectual functioning on formal intelligence testing, performing worst on tasks requiring abstract thought, symbolism, or sequential logic, and best on tasks that assess manipulative or visual-spatial skills and rote memory.

While the symptoms comprising the autistic syndrome are essentially unrelated to mental retardation, per se, most people who have autism are also mentally retarded. The basic difference between the two groups is an educationally important one. Students with autism typically show extreme individual variability across areas of intellectual functioning, while students with mental retardation typically respond to sensory inputs, people and objects, and have speech and language appropriate to their overall developmental level of cognitive functioning, whatever that may be (Ritvo and Freeman, 1977).

The studies reviewed by Ritvo and Freeman (1977) did not include children within the wider category of "autistic and autistic-like," so it is likely that there will be some variance when data are accumulated and published. It appears that the wider group will contain more severely and profoundly retarded people with autistic behaviors. Wing (1979) suggests that the autistic population represents the entire range of intelligence on nonverbal tests and includes many children who are severely or profoundly retarded. However, Wing (1979) also states that children with autism and autistic-like conditions need an educational approach that differs in certain important respects from the educational approach required by other children with mental handicaps.

How Many Children Have This Disability?

The prevalence of children with autism, as described by Kanner (1969) and Rutter (1978) is about five in every 10,000. This estimate is supported by studies carried out in Denmark, England, and the United States (Lotter, 1966; Rutter, 1967; Treffert, 1970; Wing, 1979). There have not been similar studies to establish the prevalence of "autistic-like" or "autistic and related communications handicapped," but the work of Wing and her colleagues suggests that these symptoms occur in 10 to 20 persons per 10,000, or roughly three times the prevalence of those with the Kanner Syndrome. Thus, to get an idea of the population we are discussing, one can calculate, based on 15 in every 10,000, that there are 300,000 people -- children and adults -- with autism and related communications handicaps in the United States.

To some extent, the design of educational and other human services reflects the target groups or client categories defined to receive services. Because of the definitional and categorical confusion surrounding autism, there is concern that those with autism are not enjoying the full benefits of education and other human services. At worst, there may be approximately 300,000 people in the United States with a very similar pattern of educational and human service needs that are not being systematically addressed. This is not to say, of course, that there are 300,000 people with identical needs, but, rather, that their general pattern of educational and human service needs is unlike that of any other category of disability. Of these 300,000, approximately one-third, or 100,000, are school-aged children and youth. This figure is deduced by assuming that people with autism come from all elements of society and live a normal life span (Ritvo and Freeman, 1977), and by applying the same ratio of children (0 to 21) to adults (21 and above) that is found in the general population. One hundred thousand school children is a very significant number. It is quite large enough to command the serious attention of educational planners who have carefully addressed the needs of smaller populations, such as the deaf-blind, whose categorical distinctions are more readily evident but whose educational needs are not nearly so homogeneous.

A SEPARATE CATEGORY

Hobbs (1975) has spoken of the danger of categorical designations, calling them powerful instruments for social regulation and control that are often employed for covert or hurtful purposes whose effects are to deny or degrade people. Individuals with autism and their parents have found, through painful experience, the truth of these words. It is likely that no single group has been more abused than these by the covert and hurtful use of a medical term. Pervasive misunderstanding of the nature of the disorder is at the core of the problem. This misunderstanding has been perpetuated, in part, by the existence of a group of professionals who have benefitted from it, namely, followers of those who believed the disability to be caused by poor parenting, and who gained their livelihood by practicing various therapies based on that assumption.

The label "autism" was used to scapegoat parents (Schopler, 1969), rendering them ineffective by guilt, denying their troublesome children an education and effectively condemning them to custodial institutions (Warren, 1978). The prevailing belief was that "autistic" was tantamount to "hopeless," that there was no possible intervention to salvage these individuals, and that it was a waste of time to try. However, it is the application of a label -- not the label itself -- that is harmful. It is the understanding of the characteristics described by the label that tends to make its use valuable or damaging. Inasmuch as the foregoing problems are subsiding, the large body of professionals no longer considers autism to be a psychogenic disability.

The creation of an educational category for "autistic and related communications handicaps" is proposed by the National Society for Autistic Children to foster a positive understanding of this disability and assist in the growth of a body of professionals who will benefit from understanding autism in an accurate and empirical fashion, and who will gain from the practice of educational techniques that have been shown to benefit this population. The identification of an educationally significant condition will help to create resources to alleviate the problems caused by the condition, rather than further stigmatize those who have it.

The National Society for Autistic Children recognizes the dilemma that exists with regard to categorization. With categories, children have been labeled, stigmatized, rejected, institutionalized and, in the extreme, killed by harsh environmental conditions found in various "asylums," conditions created as a result of societal rejection and neglect. Documentation of the harm that can result from labeling is extensive. Without categories, children have been overlooked, ignored, rejected, endlessly assessed and diagnosed, but unserved. They and their parents have wandered from one rejection to another until they grew old. Many have found no place where their problem could be addressed, because it was undefined, confusing, and presented unknown qualities. No category meant no recognition, no advocates, no program, and no funding. This, too, is extensively documented.

Children with autism and their parents have been speared by both horns of this dilemma. They have frequently been categorized in an inappropriate and stigmatizing fashion, with all the ensuing consequences. When they rejected the psychogenic implications of "emotional disturbance," they found themselves among the unnamed, uncategorized, unrecognized, and unserved. This miscategorization is stigmatizing for parents and confusing to policy makers. Until recently, those with autism have not had a political base for influencing the provision of human services. Children and youth with autism have been harshly treated, both by direct action (institutionalization) and by lack of action (which ultimately leads to institutionalization). It is our contention that educators must be made aware of autism as a disability that is best treated through specific educational interventions. If this is not done, then children and youth with autism will continue to be the last served because they tend to be the most difficult to serve -- or they will be excluded from generic service delivery, as has been the case historically.

Obviously, one effective way to pinpoint this group of children for specific service delivery is to name them correctly in the definitions of handicapping conditions appearing in Part 121A, Subsection 5, of the Regulations for Public Law 94-142, The Education for All Handicapped Children Act of 1975. This action alone would not bring relief from all difficulties. It would, at the very least, represent autism as a serious condition that affects many children, demonstrate that it has educational significance, and specifically include autistic children among those for whom Public Law 94-142 mandates free, appropriate public education and related services. Such recognition is the first purpose of recommending the category of "autistic and related communication handicaps."

Increased recognition can facilitate a number of needed changes:

At the Federal Level:

1. Proper identification of this disability by federal agencies, such as the Office for Civil Rights, Head Start, certain Housing and Urban Development agencies,

the Social Security Administration, all of which have drawn on the Office of Special Education's definition for their authority.

2. Funding of model programs and/or service delivery systems designed to meet the needs of this population.

3. Accumulation of statistical data to support the need for services.

At the State Level:

4. Proper identification of this disability by state education agencies. Currently, states tend to follow the OSE lead in labeling these children "emotionally disturbed." Oklahoma and D. C., for example, actively subscribe to the psychogenic theory and blame parents for autism in their children. (Warren, 1979; Davis, 1980). NSAC efforts have removed autism from this category in six states with the expenditure of much time and energy -- a struggle that OSE could have prevented with the stroke of a pen.

5. Accumulation of statistical data to document the need for service. This task is impossible unless there is an appropriate category for counting those served, unserved, and improperly served.

6. Recognition at the state level, which can be expected to have the same effect among related agencies as at the federal level. SEA's are authoritative within individual states. Many other agencies look to SEA's and tend to follow their example.

7. State teacher training and certification requirements which include acknowledgment that autism is a significant problem to be addressed by teachers.

8. State funding of training and service delivery systems for this population.

At the Local Level

9. Proper assessment of the disability and the problems it presents so that rational planning can occur. Classifying these children as "emotionally disturbed," "mentally retarded," etc., is harmful and, at best, delays proper educational intervention.

10. Accumulation of statistical data to document the need for services, and to use for accountability purposes.

11. Improved individualized education planning for children and youth with autism.

12. Funding of teachers and ancillary personnel to serve this population.

The IEP Mandate Is Not Enough

It has been suggested that parents do not need the intrinsic support of an accurate educational category for their autistic children, and that a free, appropriate public education is available, provided that parents use the individualized educational program (IEP) to get it. This is an unfair position for parents of children with autism and related handicaps. Too often, schools are unwilling to accommodate these children, unaware of proper educational technology and suspicious of, if not hostile toward, parents. The "emotionally disturbed" category suggests to school authorities that these parents could have contributed to their children's disorders, if they did not actually cause them in the first place.

To rely only on the IEP process to secure an appropriate educational program for children with autism sets powerful and experienced school officials (who often do not wish to provide and would have to restructure their budgets to do so) against parents who have often been isolated by their child's disorder, have been harassed at great length, devalued, and have been alone because the incidence of autism is low and the needs are uncommon. Despite the fact that the law is on the parents' side, this situation is heavily weighted against an appropriate education for the child.

We believe that a clear and separate definition of autism in the Regulations for Public Law 94-142 will help, rather than hurt, children and youth who are autistic. In the ideal world, of course, there would be no labels, only children; education and services would be provided instantly on the basis of real need. Unfortunately, this ideal is light years away; but children with autism are here, now, and cannot afford the luxury of waiting for the millenium.

LEARNING IS DIFFERENT FOR CHILDREN WITH AUTISM

Autistic or autistic-like behavior is considered to be a reaction to deficits in cognitive information processing. Such deficits may be manifested in a number of widely varied behaviors, as suggested earlier. This section will present a review of the research on learning patterns in children and young adults with autism, as summarized from Gallagher and Wiegerink (1976).

Pribram (1970) pointed to a relationship between the behavioral characteristics of autistic children and brain injury in the frontolimbic core area. Accordingly, he suggested that the autistic child's basic defect is in short-term memory and the failure to register interpersonal and cognitive relationships. Further, in distinguishing between context-free and context-sensitive behaviors, Pribram defines signs as context-free attributions signifying constant aspects of the environment, whereas symbols are context-dependent constructions that represent the organism's sensitivity to changes in the environment. Since symbolic skills are vulnerable to injury in the frontolimbic core of the brain, language, for example, would be difficult to develop under conditions of early damage (cf. Luria, 1966).

Bryson (1970) explored the question as to whether short-term memory was the basis of supposed perceptual problems in autistic children. On the basis of studies that had reported auditory and visual information-processing problems, it was considered possible that the cross-modal defects (auditory-visual) are caused by the child's inability to hold an auditory signal in short-term memory long enough to match it with a visual signal. In presenting a series of matching and sequencing tasks to six autistic children, aged three to six, Bryson used a visual-visual dimension (matching pictures of objects) and an auditory-visual dimension (in response to an auditory cue, the child's task was to match the cue to an appropriate picture). This experiment showed that serious impairment in functioning occurred when the examiner simply delayed the presentation, the matching, or the sequencing tasks for three seconds after the presentation of the original stimulus. Two specific deficits were identifiable: visual-visual short-term memory and auditory-visual information processing; the latter remained uniformly difficult for most of the subjects under both delayed and immediate presentation conditions.

Other researchers have pointed to difficulties in preferences for modalities among autistic children, who preferred visual over auditory stimuli in Ornitz's (1976) research. Lovaas, Schreibman, Koegel, and Rehm (1971) found in their subjects overselection or responding to only one stimulus complex when presented with an auditory, visual, and tactile array. Autistic children in the studies of Hermelin and O'Connor (1970) depended on motor feedback for learning. In still other studies (Hermelin and O'Connor, 1970; Frith and Hermelin, 1969), it appeared that autistic children learned through cues that were primarily manipulative and benefitted little from additional visual information. The authors of these latter studies concluded that their subjects relied more on perceptual activity than on perceptual analysis.

Ornitz (1976) contrasted theories regarding the underlying sensory problems of autistic individuals: (a) that physiologic over-arousal leads to motor activity designed to reduce stimulus bombardment (Hutt, Hutt, Lee, and Ornsted, 1965); (b) that insufficient sensory stimulation results in the need for additional sensory input; (c) that sensory motor behaviors are a result of inadequate moderation of sensory input, that under and over reactions to sensory inputs are a result of dysfunctioning gaiting mechanisms. Ornitz concluded that the primary disorder centered on sensorimotor integration. These findings account for the erratic behavior that autistic children show within educational environments and during educational programming, and they indicate the need for educational environments that provide controlled sensory input that is responsive to inter and intra individual differences.

Specific Learning Characteristics

Students with autism have specific learning characteristics that differ from those of students with other handicaps. This difference is illustrated in Figures 1 through 5, which present performance data for autistic, nonhandicapped, and other handicapped students on a variety of learning tasks and performance dimensions (Krug, Arick, and Almond, 1978). In general, students with autism took substantially longer to learn simple discriminations than did other handicapped students (trainable mentally retarded, IQ 30 to 50), and manifested substantially different interaction patterns as compared with other students.

Lovaas (1977) and his colleagues have extensively examined the discrimination learning problems of children with autism. When presented with two items for the learning of color labels (a verbal instruction is given, "point to red," or "point to blue"), the child will demonstrate difficulty in shifting appropriately from one response to another. For instance, the child will successfully learn to identify blue, but will persist or perseverate in this response in the presence of the instruction to "point to red." Once taught to identify red, the child will tend to perseverate on red, despite the instruction to identify blue. In short, each time an instruction is switched, a certain amount of loss is demonstrated. However, each time the other instruction is reintroduced, the child will take fewer trials to regain correct responding. The loss of learning typically decreases as new responses, third and fourth discriminators, are learned.

Lovaas, Schriebman, Koegel, and Rehm (1971) found clues relevant to why autistic children have such difficulty with discrimination learning. He compared three groups of children: autistic, retarded, and those with no handicaps (normal), and discovered that children with autism responded primarily to only one cue in a discriminative learning task, while normal children responded to all three, and retarded children fluctuated between the performance of the other two groups. The term "stimulus overselectivity" was coined to label the frequently observed phenomenon in autistic children of overselective attention (Lovaas and Schreibman, 1977); Schreibman and Lovaas, 1973). Stimulus overselectivity is thought to lead to problems in the acquisition of environmental contexts that underlie meaningful speech.

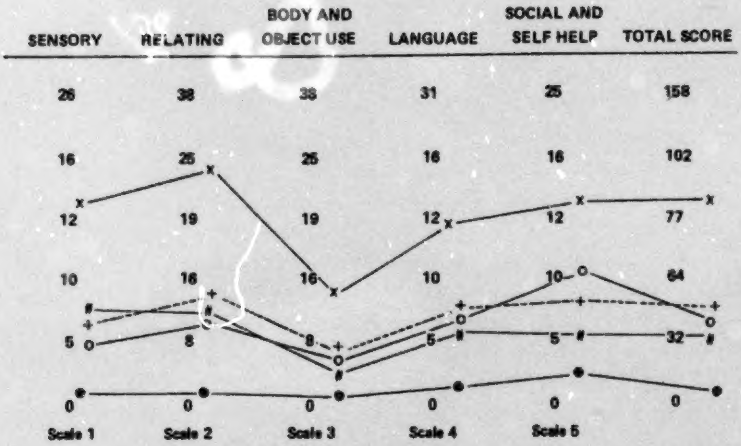

FIGURE 1

AUTISM BEHAVIOR CHECKLIST PROFILE CHART

● Normal
+ Severely Mentally Retarded
o Emotionally Disturbed
x Autistic
Deaf/Blind

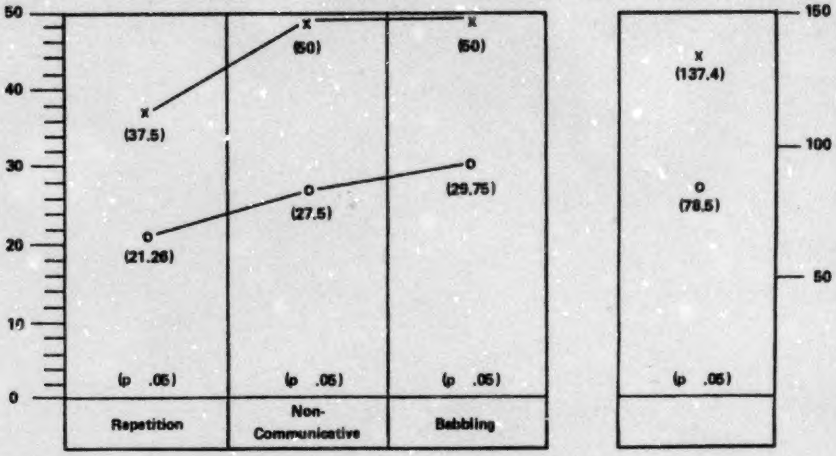

FIGURE 2

DIFFERENTIAL CHARACTERISTICS OF VOCAL BEHAVIOR: PRESCHOOL AGE STUDENTS

x = Autistic, Preschool Age Mean (N=5)
o = Non-Autistic, Preschool Age Mean (N=4)

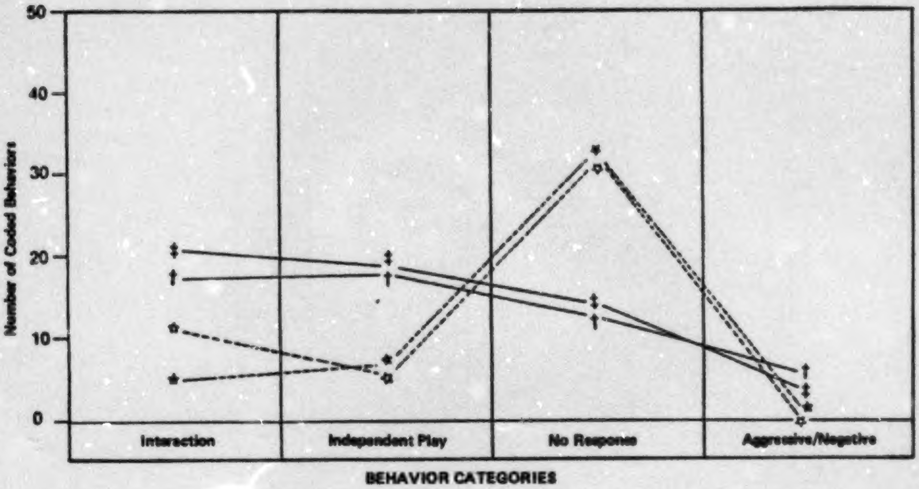

FIGURE 3

MATCHED SAMPLE INTERACTION PROFILE

★ = Preschool autistic
☆ = School age autistic
† = Preschool mentally retarded nonautistic
‡ = School age mentally retarded nonautistic

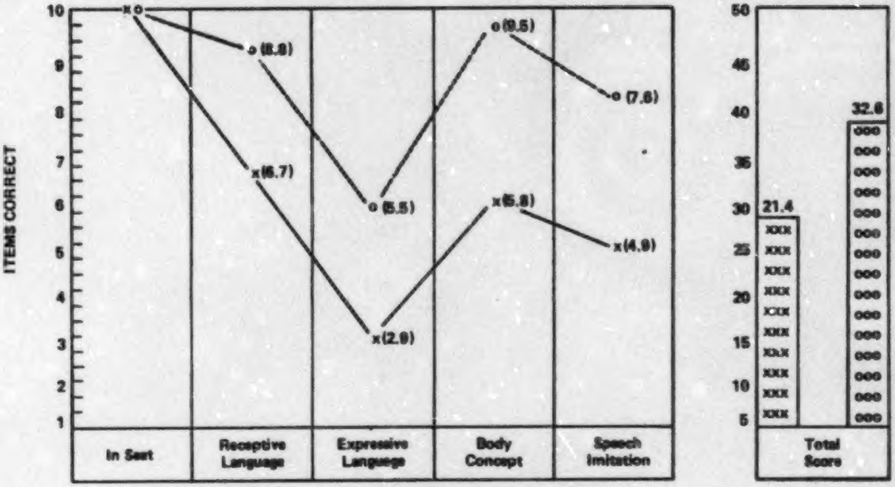

FIGURE 4
EDUCATIONAL ASSESSMENT: DIAGNOSTIC BREAKDOWN

x = Diagnosed autistic;
N = 41.
o = Diagnosed severely handicapped;
N = 31.

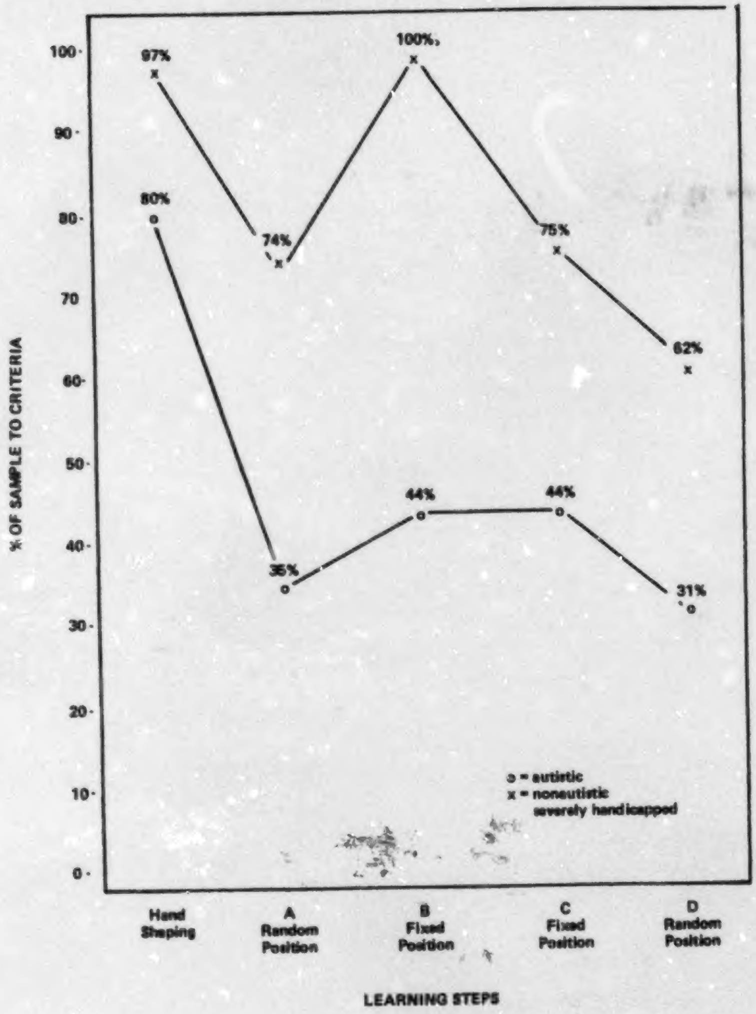

FIGURE 5
DIAGNOSTIC PROFILES

Impairment of speech and language is one of the major characteristics of children with autism. There have been many studies which compared other groups' learning of language skills with the learning of autistic children. Morton-Evans and Hensley (1978) found that, although receptive aphasic children had problems similar to those of children with autism in associating sounds with visual counterparts, the receptive aphasics were able to overcome the problem at a significantly faster rate. They suggest that one deficit crucial to the language disability in autistic children is a lack of learning of essential pre-speech cognitive skills (i.e., auditory-visual associative learning). Hermelin and O'Connor (1970) and Frith (1971) report that children with autism have a more profound and varied disturbance of language functions than mentally retarded children. Rutter (1978) noted the poor performance of children with autism on tests requiring verbal or sequencing skills. The remarkable aspect of this observation is that the tasks described did not involve speech, which points to the likelihood of a true language deficit, rather than a lack of motivation or an emotional block. An earlier study by Bartak, Rutter, and Cox (1977) confirms that dysphasia differs from autism in severity, extent, degree of language deviance, and the kind of impaired usage of both spoken language and gestural form. Again, the hypothesis of a cognitive deficit is supported.

Application of Findings

These findings point toward certain educational approaches. Often these are recommended and used in a systematic fashion for all autistic children, regardless of their variability in learning abilities and handicaps (Lansing and Schopler, 1978). The nature of autism is such that, for best results, all available resources in a child's environment be employed to assist him toward his highest level of functioning. Parent involvement is critical to the creation of a coordinated home-school educational program, and also to the individualization of curriculum that is necessary to take into account each child's unique learning profile.

It is possible to conclude from these studies that students with autism do have a unique learning style -- a fact that parents and teachers have long known. Further, this learning style is the result of cognitive defects, primarily involving sensorimotor integration, and has the following characteristics:

1. Seriously impaired short-term memory;
2. A tendency to prefer visual over auditory stimuli;
3. A tendency to learn more quickly when manipulative cues are used;
4. Difficulty in responding to more than one cue at a time;
5. A tendency to persist in a successfully learned response when a different instruction is given (perseveration);
6. A tendency to respond to stimuli not observed by others, which often results in problematic behavior; and
7. Stereotypic self-stimulation which impairs attention spans.

As a group, these children learn much more slowly then children who are mentally retarded, who have other handicaps, and who are normal, although a tendency toward selective attention can result in occasional feats of learning far out of proportion to the overall profile of autistic students.

Autistic students will do better when the teaching plan is carefully structured, when extraneous stimuli are limited, and when a system of instructions, prompts, and instant rewards for correct behavior is used. These structured educational approaches, applied in a humanistic manner, taking into account the unique characteristics of each child's ability, and employing the full spectrum of resources available in his home environment are the autistic child's best and perhaps only hope of escaping lifelong institutionalization.

NOW THAT THE BASICS ARE CLEAR, WHAT NEXT?

Children and young adults with autism and related communications handicaps are among the most severely and profoundly affected of all individuals with developmental disabilities. A Congressionally appointed task force on developmental disability (the Abt Associates Task Force on Developmental Disability), carrying out a mandate to survey and define that population, reported in 1977 that 95 percent of all people with autism are disabled under the terms of the Developmental Disabilities Act. This compares with 70 percent of those with cerebral palsy, 20 percent of those with mental retardation, 20 percent of those with other severe chronic disabilities, and 25 percent of those with epilepsy. As noted earlier, the National Information and Advocacy Project for autistic and autistic-like persons estimated in 1977 that 95 percent of all people with autism face institutionalization because of a pervasive lack of educational and human services open to them (Sullivan, 1977). As a group, they are the most at-risk population in the United States today. However, as has often been the case with minority groups whose numbers and political clout are small, children and youth with autism and autistic-like conditions have been overlooked.

Barriers To Be Overcome

A cursory look at the educational service delivery structure provides more than a hint of the full extent of this problem and identifies a number of barriers that should be removed:

1. Improper categorization at the national level causes confusion and fosters the continuation of harmful attitudes and educational approaches;

2. Autistic children are counted as part of a larger and distinctively different group, thus circumventing the purpose of the child-find mandate and eliminating the possibility of holding states accountable for lack of services;

3. Absence of a national system of inservice training for teachers of this population impedes expansion of educational services to them;

4. There is a general lack of university degree programs to train teachers of autistic and related communications handicapped children;

5. Fewer than 300 classrooms for children and youth with autism and autistic-like conditions are currently operating in the country;

6. Forty-eight of the fifty states, the territories, Puerto Rico, and the District of Columbia, are without statewide programs designed to meet the unique educational needs of this population. Only two states have them, and neither of them is based in the state education agency; and

7. States commonly provide education by category, with no category for this population, thus forcing parents to gain appropriate education through due process mechanisms and the courts -- or give up.

By translating each of these barriers into a statement of need, goals can be set that will vastly improve conditions for children and youth with autism, make life easier for their parents and families, and save thousands of these people from institutional care.

First, it is imperative that the Office of Special Education take action to rectify the damage done by the inaccurate classification of autism as a "severe emotional disturbance" in the regulations of Public Law 94-142 by removing autism from this category. We believe the most rational action is the inclusion of "autism and related communications handicaps" as a separate category. As it currently stands, the law lists nine categories and the regulations list eleven. We propose a twelfth category in the regulations to recognize the unique needs and the at-risk status of this population, clearing up much confusion and making it possible for children with autism to receive an education in a more rational fashion. We respectfully suggest that the Office of Special Education address each of the issues listed above with all of its ingenuity and resources.

Issues in Educational Service Delivery

As Baldwin (1976) says, the best curriculum in the world, one that covers virtually every behavior anybody ever wanted, is absolutely worthless if there is no system of delivery. States should be encouraged to establish a system of educational service delivery for students with autism and related communications handicaps, and to structure that system so that public school personnel are linked with centers of knowledge in this area. The system should be built upon the assumption that children and youth with autism are among the most at risk of all handicapped children and stand in particular danger of being denied. Of prime importance is the concept of functional assessment, i.e., the delineation of a child's individual learning profile with emphasis on skills that are emerging and the use of these findings for the creation of an individualized educational program.

The Need for Teacher Training

Because children with autism and related communications handicaps have historically been excluded from public school classrooms, often by law, little if any attention has been paid to their needs in teacher training programs throughout the country. Few preservice teacher training programs for this population exist (Smith, 1977), and many of those currently operating use a more generic title. Subsuming a training program under "severely behavior disordered" or "severely handicapped" or some other collective title makes it difficult to determine whether the specific learning characteristics of students with autism are being addressed. In most cases, they are not.

The task of training suitable personnel for this population is facilitated by several factors:

* First, although they are difficult learners, children with autism have been shown to be extremely amenable to education;

* Second, autism presents a unique teaching challenge. While discouraging some educators and educational administrators in the past, this challenge has attracted a large number of educators who are interested in these children; and

* Third, there is a large body of data to be drawn upon when developing a teacher training program. Even a cursory review of the Journal of Applied Behavior Analysis, Journal of Behavior Research and Therapy, and Journal of Autism and Developmental Disorders will indicate that the number of papers published about children with autism is disproportional to the incidence.

The Office of Special Education should support teacher training capacities in universities that are currently involved in significant work with this population, as well as a system for meeting inservice training needs in each state. At a minimum, each state educational agency should have a self-contained state-supported competency-based training capacity. A set of competencies for such training systems (LaVigna and Donnellan, 1979) is suggested in Appendix B.

A Continuum of Resources

Methodology does exist to alleviate problems of behavior, communication, learning, and vocational preparation faced by children and youth with autism and related communications handicaps. Issues in the areas of early intervention, communication, reduction of self-injurious and self-stimulatory behavior, social interaction, and preparation for employment and community living are addressed in other chapters. They represent techniques that, when taken together, form a continuum of educational resources necessary for this population. This continuum of resources would benefit all children and youth with severe handicapping conditions. It is, however, more than just beneficial for those with autism and autistic-like conditions; it is essential.

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Appendix A

DEFINITION OF THE SYNDROME OF AUTISM

Approved by the Board of Directors and the
Professional Advisory Board
National Society for Autistic Children
July 1977

Submitted by Edward R. Ritvo, M.D., Chairman, Professional Advisory Board, National Society for Autistic Children, and B. J. Freeman, Ph.D. (This is a working definition. It will be altered if indicated by the results of ongoing research.)

I. Essential features: Autism is a behaviorally defined syndrome. The essential features are typically manifested prior to 30 months of age and include disturbances of: (1) developmental rates and/or sequences, (2) responses to sensory stimuli, (3) speech, language, and cognitive capacities, and (4) capacities to relate to people, events, and objects.

(1) Disturbances of developmental rates and sequences: Normal coordination of the three developmental pathways (motor, social-adaptive, cognitive) is disrupted. Delays, arrests, and/or regressions occur among or within one or more of the pathways; (a) within the motor pathway: for example, gross motor milestones may be normal while fine motor milestones are delayed; (b) between pathways: for example, motor milestones may be normal while social-adaptive and cognitive are delayed; (c) arrests, delays and regression: for example, motor development may be normal until age 2 when walking stops; some cognitive skills may develop at expected times while others are delayed or absent; imitative behavior and/or speech may be delayed in onset until age 3, followed by rapid acquistion to expected developmental level.

(2) Disturbances of responses to sensory stimuli: There may be generalized hyper-reactivity or hypo-reactivity, and alternation of these two states over periods ranging from hours to months; for example, (a) visual symptoms: these may be close scrutiny of visual details, apparent non-use of eye contact, staring, prolonged regarding of

hands or objects, attention to changing levels of illumination; (b) auditory symptoms: these may be close attention to self-induced sounds, non-response or over-response to varying levels of sound; (c) tactile symptoms: these may be over- or under-reactions to touch, pain, and temperatures, prolonged rubbing of surfaces, and sensitivity to food textures; (d) vestibular systems: these may be over- or under-reactions to gravity stimuli, whirling without dizziness, and preoccupation with spinning objects; (e) olfactory and gustatory symptoms: these may be repetitive sniffing, specific food preferences, and licking of inedible objects; (f) proprioceptive symptoms: these may be posturing, darting-lunging movements, hand flapping, gesticulations and grimaces.

(3) Disturbances of speech, language-cognition, and nonverbal communication: Symptoms may include; (a) speech: for example, mutism, delayed onset, immature syntax and articulation, modulated but immature inflections; (b) language-cognition: for example, absent or limited symbolic capacity, specific cognitive capacities such as rote memory and visual-spatial relations intact with failure to develop the use of abstract terms, concepts, and reasoning; immediate delayed, negative echolalia with or without communicative intent; non-logical use of concepts; neologisms; (c) nonverbal communication: for example, absent or delayed development of appropriate gestures, dissociation of gestures from language, and failure to assign symbolic meaning to gestures.

(4) Disturbances of the capacity to appropriately relate to people, events, and objects, manifested by failure to develop appropriate responsivity to people and assignment of appropriate symbolic meaning to objects. For example: (a) people: absence, arrests and/or delays of smiling response, stranger anxiety, anticipatory response to gestures. playing "peek-a-boo," playing "patty-cake," and waving "bye-bye," reciprocal use of eye contact and facial responsivity, and appropriate reciprocal responsiveness to physical contact; failure to develop a relationship with significant caretakers or excessive reliance on caretakers. For example, caretakers may be treated indifferently interchangeably, with only mecha-

nical clinging, or with panic on separation. Cooperative play and friendships (usually appearing between two and four) may not develop. Expected responses to adults and peers (usually appearing between five and seven) may develop, but are superficial, immature, and only in response to strong social cues. (b) Objects: absent, arrested and/or delayed capacities to utilize objects and/or toys in an age-appropriate manner and/or to assign them symbolic and/or thematic meaning. Objects are often used in idiosyncratic, stereotypic and/or perseverative ways. Interference with this use of objects often results in expressions of discomfort and/or panic. (c) Events: There may be a particular awareness of the sequence of events and disruption of this sequence may result in expressions of discomfort and/or panic.

II. Associated features: Associated clinical features vary with age and include other disturbances of thought, mood, and behavior. Mood may be labile; crying may be unexplained or inconsolable; there may be giggling or laughing without identifiable stimuli. Delusions and hallucinatory experiences have been reported. There may be a lack of appreciation of real dangers, such as moving vehicles and heights as well as inappropriate fears. Self-injurious behaviors, such as hair pulling and hitting or biting parts of the body, may be present, and stereotypic and repetitive movements of limbs or the entire body are common.

Current research estimates are that approximately 60 percent of autistic children have measured IQs below 50; 20 percent between 50-70, and 20 percent of 70 or more. The majority show extreme variability of intellectual functioning on formal IQ testing. They perform worst on tasks requiring abstract thought, symbolism or sequential logic, and best on those assessing manipulative or visual-spatial skills and rote memory.

Recent studies indicate that the incidence of EEG abnormalities increases with age as does the possible onset of seizures.

III. Impairment: The syndrome is severely incapacitating. Periodic medical, neurological, psychological, educational, and behavioral reassessments are necessary. One must monitor the course of the syndrome to keep treatment planning apace with physiological and behavioral changes. Special educational facilities are almost always required. Behaviorally structured, functional, individualized programs have been demonstrated to be most helpful. Counseling families regarding total living planning is often desirable. Individual supportive psychotherapy and symptomatically targeted pharmacologic therapy may enhance social-adaptive functioning in selected persons. The severe form of the syndrome may include the most extreme forms of self-injurious, repetitive, highly unusual and aggressive behaviors. Such behaviors may be persistent and highly resistant to change, often requiring unique management, treatment, or teaching strategies.

IV. Age of onset: The exact age of onset is unknown, but symptoms have been reported and observed during the first months of life. Families may be unaware of early symptoms until the child fails to pass major developmental milestones (i.e., onset of walking, speech, socialization with peers). They may then date the onset of the syndrome to these missed milestones, whereas careful history taking may reveal that subtle symptoms were present earlier.

V. Etiology: The symptoms are best explained as expressive of a physical dysfunction within the central nervous system (CNS)--the exact nature and type of which has yet to be determined. This physical dysfunction of the CNS occurs independently or in association with other disorders which directly affect the central nervous system (i.e., maternal rubella, PKU, Down's Syndrome, epilepsy). In such cases, the diagnosis of autism is made on Axis One, and the coexisting organic condition coded on Axis Three.

VI. Incidence and Sex Ratio: The syndrome has been identified in all parts of the world. It is very rare, with an incidence of approximately 4 or 5 per 10,000 births. It is found four to five times more commonly in males.

VII. Complications: Major complications are self-induced physical injuries, infections related to improper hygiene, dental problems related to persistent bruxism, and physical injuries due to inadvertent exposures.

VIII. Differential diagnosis:

(1) Mental retardation, etiology unknown and known: Here developmental delays usually occur in all areas, and developmental sequences (motor, social, and cognitive) remain coordinated. Responses to sensory inputs, people and objects, and speech and language development are appropriate to the overall developmental level of cognitive functioning.

(2) Specific sensory deficits (e.g., deafness, blindness): Here compensatory behaviors may be confused with symptoms indicative of autism (e.g., hyperreactivity to auditory, proprioceptive and tactile stimuli in blind children (i.e., blindisms); hyperresponsivity to visual, proprioceptive (i.e., head shaking), and tactile stimuli in deaf children. When auditory and visual deficits are accompanied by mental retardation, speech, language and the ability to relate to people and objects are appropriate to the overall developmental level of cognitive functioning.

(3) Congenital, developmental, and acquired disorders of central processing of language (aphasias): Here disturbances in language development and central processing are not accompanied by disturbances of responses to sensory inputs, dissociation of other developmental courses (motor, social), relatedness to people and objects. Aphasics may imitate and use gestures and other means to communicate symbolic content. If these disorders are accompanied by mental retardation, then it must be assessed independently of the disturbances of central processing of language.

(4) Sequelae of physical of psychological trauma (e.g., syndromes previously described as hospitalism, maternal deprivation, anaclitic depression, sequelae of a chronically traumatizing environment): Here syndromes include failure to thrive, infantile apathy and withdrawal, physical illnesses secondary to malnutrition or toxin ingestions and physical abuse, specific psychological fixations (psychogenic psychoses, severe neuroses, pathological character development), and all degrees of mental retardation. The pattern of symp-

toms and developmental delays are specific to the syndromes described, are related to specific etiologic factors in psychological and social environments, and respond to specific therapies if instituted before permanent changes have resulted.

(5) Schizophrenia, childhood type: Here the disorder is characterized by the presence of a thought disorder (see definition DSM III category). Certain persons with the syndrome of autism as defined in category 299.00 also may fit the criteria for childhood schizophrenia, particularly at a later age (ages 5-12). In this case, both diagnoses should be listed so that subsequent researchers can objectively test the two main hypotheses regarding the relationship between these two syndromes, i.e., autism is the earliest form of schizophrenia as manifested in late childhood or early adulthood or that autism and schizophrenia are distinct syndromes with different etiologies, family histories, and courses.

(6) Degenerative organic brain syndromes (e.g., Schilder's Disease, Heller's Syndrome) with or without mental retardation: Here the clinical course is characterized by progressive regressions in all or some areas of development (motor, social-adaptive, and cognitive). In the early stages, these regressions may mimic symptoms indicative of autism but are distinguishable by their neurological, psychological, and cognitive testing, and unremitting deteriorating course.

IX. Predisposing factors: None known.

X. Family factors: None known. The syndrome has been identified in all parts of the world. Recent studies have revealed no correlation between autism [illegible] parental psychopathology.

XI. Operational criteria: A, B, C, D and E are required.

A. Signs and symptoms present prior to 30 months of age.

B. Disturbances of developmental rate and/or sequences.

C. Disturbances of responsiveness to sensory stimuli.

D. Disturbances of speech, language and cognitive capacities.

E. Disturbance in relating to people, events and objects.

Appendix B

COMPETENCIES FOR TEACHERS OF CHILDREN AND YOUTH WITH AUTISM AND RELATED COMMUNICATIONS HANDICAPS

Prepared by Gary LaVigna and Anne Donnellan

AUTISM

1. COMPETENCY: Demonstrate knowledge of prominent theories about autism. CRITERION: Upon being given a list of eight major writers in the field, trainee will be able to write a short paragraph about each of five describing their major theoretical contribution to the field including the present status of their work.

2. COMPETENCY: Demonstrate familiarity with the major research journals currently publishing about autism.

   CRITERION: Have read at least one article from each of three journals including Journal of Autism and Developmental Disorders, Journal of Applied Behavioral Analysis, Journal of Behavior Therapy, know where to obtain these journals, and be able to describe in writing or orally their relevance to classroom work.

3. COMPETENCY: Demonstrate an understanding of the relevance of certain basic research topics to the education of autistic children. CRITERION: With the assistance of their own notes, trainees will be able to discuss for fifteen minutes the implications of studies on over-selectivity, generalization difficulties and/or processing styles of autistic children to their education.

4. COMPETENCY: Demonstrate a knowledge and understanding of the issues involved in the relationship between "parenting" and autism. CRITERION: Trainee will be able to discuss for up to fifteen minutes the historical controversy over autism as an effect of poor parenting. Trainee will also demonstrate a knowledge of the environmental support of autistic behaviors as they affect progress of a given child.

5. COMPETENCY: Demonstrate an understanding of the significance of prognosis on educational planning.

   CRITERION: Trainee will be able to discuss for fifteen minutes his/her knowledge of the literature on prognosis and its implications for curriculum development, individualized educational programming, long-range goals, etc.

6. COMPETENCY: Demonstrate a knowledge of the criteria commonly used to diagnose autism.

   CRITERION: In written or oral form trainee will list the major characteristics of autism as defined by Kanner, Rutter, Wing, Rimland or NSAC.

7. COMPETENCY: Demonstrate understanding of the relative value of diagnosis or assessment in educational planning.

   CRITERION: In writing or orally trainee will describe the kinds of diagnostic information which he/she would seek from other professionals to assist in educational planning including language characteristics, level of retardation, processing modes or preferences, etc., and why.

DISCRETE TRIAL TEACHING

1. COMPETENCY: Demonstrate knowledge of the components of the Discrete Trial. CRITERION: Without reference to written materials, trainee will be able to list, in order, the five components of the discrete trial.

2. COMPETENCY: Demonstrate knowledge of the characteristics of each of the components of the discrete trial: Instructional stimulus. CRITERION: Without reference to any written material, the trainee will define "instructional stimulus" including the concept of different conditions setting the occasion for a particular response.

3. COMPETENCY: Ditto "prompt."

   CRITERION: Without reference to any written material, the trainee will define "prompt" including its purpose, its relationship to instructional stimulus and to the target response.

4. COMPETENCY: Ditto "response."

CRITERION: Without reference to any written material, the trainee will define "response" including the concepts of reliable observation and measurement.

5. COMPETENCY: Ditto "consequence."

CRITERION: Without reference to any written materials, the trainee shall define "consequence" including its purpose in terms of future responses.

6. COMPETENCY: Ditto "intertrial interval."

CRITERION: Without reference to any written material, the trainee will define "intertrial interval" including its approximate length of time and its purpose in the sequence of trials.

7. COMPETENCY: Ability to adapt the components of the Discrete Trial Format to a variety of conditions: Instruction.

CRITERION: Given three target behaviors, trainee will write an instruction as appropriate to each behavior incorporating the necessary characteristics of the instructional phase of the Discrete Trial.

8. COMPETENCY: Ditto "prompt."

CRITERION: Given three sets of instructions and responses, trainees will give three possible prompts which might be used and will be able to discuss what conditions might possibly limit the effectiveness of each. Criterion can be met orally or in writing.

9. COMPETENCY: Ditto "response."

CRITERION: Given three areas about which to write an instructional objective, trainee will write a response definition for each including behavioral terms, the occasion for the response and the criteria for being correct so that two independent observers can reliably measure the number of correct responses over ten trials.

10. COMPETENCY: Ditto "consequence."

CRITERION: Given a paragraph describing a child, his general likes and dislikes and a task to be taught to him, trainee will list consequences for correct, incorrect and off-task behaviors.

11. COMPETENCY: Demonstrate a knowledge of the appropriate teacher behaviors during the inter-trial interval.

CRITERION: Trainee will state, orally or in writing, teacher activities during inter-trial interval including data recording, kinds of entries to be recorded, role of social reinforcers during this period.

12. COMPETENCY: Demonstrate ability to implement the Discrete Trial Format with autistic students.

CRITERION: (In vivo) Given three Discrete Trial Lesson plans trainee will implement those plans for twenty trials each with a different autistic child. The implementation will include the appropriate presentation of the instructional stimuli, the effective use of prompting which will be faded as appropriate, the specified use of contingencies for correct and incorrect responses and appropriate use of inter-trial interval time.

PROGRAMMING

1. COMPETENCY: Ability to identify the major components of a teaching program.

CRITERION: The trainee will be able to list the various components of a teaching program in terms of specification of both teacher and student behavior.

2. COMPETENCY: Ability to explain the concept of "shaping" as it relates to program design.

CRITERION: The trainee will be able to define shaping and give three examples of how shaping would be incorporated in program design.

3. COMPETENCY: Ability to explain the notion of prompt fading in respect to program design.

   CRITERION: The trainee will be able to give three examples of the use of prompt fading in program design. In addition, the trainee will be able to differentiate between the use of extra- and within-stimulus prompts in respect to the needs of separate program steps.

4. COMPETENCY: Ability to incorporate criterion levels into program design.

   CRITERION: [illegible] trainee will be able to describe the function of criterion levels and explain how he or she would use them by giving three examples of both success and fail criteria.

5. COMPETENCY: Ability to effectively use different schedules of reinforcement in program design.

   CRITERION: The trainee will be able to describe the function of continuous vs. intermittent schedules of reinforcement, and give examples of how these would be incorporated in program design.

6. COMPETENCY: Ability to effectively use response definitions for purposes of program design.

   CRITERION: The trainee will be able to "translate" broad and unspecific teaching objectives into operational terms and explain why such should be done for purposes of program design and data collection.

7. COMPETENCY: Ability to design "long-term" programs that incorporate changes of the various program components.

   CRITERION: The trainee will be able to explain how the various program components change over time if teaching progress is to occur, and on what basis programs would be changed while being implemented.

8. COMPETENCY: Ability to evaluate the strengths and weaknesses of a program for various areas of curriculum.

CRITERION: Given a prepared or published program, the trainees will be able to prepare a written critique in terms of the essential elements and qualities as presented during training. Where appropriate, the critique will describe desirable revisions to make the program usable for an individual child.

9. COMPETENCY: Ability to design a program for various curriculum areas.

   CRITERION: On the basis of hypothetical assessment information the trainee will be able to design a program in the areas of:

   1. Independent living skills (utilizing chaining procedures)
   2. Social skills
   3. Language skills
   4. Cognitive skills

LANGUAGE

1. COMPETENCY: Ability to discuss muteness in autism.

   CRITERION: The trainee will be able to discuss the extent to which autistic and autistic-like persons can be expected to be mute, and will be able to differentiate between different forms of muteness along the dimensions of communicative intent and receptive language ability.

2. COMPETENCY: Ability to discuss echolalia in autism.

   CRITERION: The trainee will be able to discuss the extent to which autistic people can be expected to exhibit echolalia behaviors, and be able to differentiate between different forms of echolalia along the dimensions of communicative intent, receptive language ability and structural mitigation.

3. COMPETENCY: Ability to discuss autism as a language disorder.

CRITERION: The trainee will be able to define the three major aspects of language, and determine their relevance in terms of the different forms of muteness and echolalia that are exhibited in childhood autism.

4. COMPETENCY: Ability to discuss autism as a disorder of communication.

   CRITERION: The trainee will be able to define the relationships between linguistic and communicative skills, and be able to list a series of criteria to be used to assess communicative competencies in autistic people.

5. COMPETENCY: Ability to discuss autism as a disorder of cognition.

   CRITERION: The trainee will be able to define the relationship between cognitive and linguistic competencies, and be able to explain the phenomenon of "developmental discontinuity" on the basis of the attentional and perceptual characteristics of autistic functioning.

6. COMPETENCY: Ability to discuss autism in respect to theories about language acquistion in normal children.

   CRITERION: The trainee will be able to summarize recent developments in the area of developmental psycholinguistics and sociolinguistics, and comment on the interaction of social, linguistic and cognitive development in respect to the autistic syndrome.

7. COMPETENCY: Ability to implement language assessment techniques.

   CRITERION: The trainee will be able to carry out a complete language assessment, and supervise others in doing so. In addition, he or she will be able to provide a rationale for the course of action.

8. COMPETENCY: Ability to design a program to teach the first set of communicative behaviors to a nonverbal child.

CRITERION: The trainee will be able to write out a program to teach a single communicative behavior on the basis of assessment findings. In doing so he or she will be able to give a rationale for the choice of communication system as well as for the choice of communicative function.

9. COMPETENCY: Ability to design a program to implement discrimination training.

CRITERION: The trainee will be able to describe the steps involved in teaching discriminations between:

1. Spoken labels
2. Signed labels (receptive and expressive)
3. Written word labels

In doing so the trainee will be able to give a rationale for the choice of teaching techniques (i.e., prompting) and program steps used.

10. COMPETENCY: Ability to design a program to teach grammatical rather than labeling functions.

CRITERION: The trainee will be able to describe the teaching steps involved in teaching:

1. Two word combinations (nouns and verbs)
2. Prepositions

In doing so the trainee should be able to provide a rationale for the selection of word combinations to be taught and be able to explain which behaviors would be considered a prerequisite to the implementation of the teaching programs designed.

BEHAVIOR MANAGEMENT

1. COMPETENCY: Identifies target behaviors in relation to antecedent and consequent environmental events which are associated with them and identifies direction of desired behavior change.

CRITERION: (In vivo exercises) Given a referred behavior problem, the trainees identify the appropriate targets, the associated antecedent and consequent events and specifies the direction of desired behavior change.

2. COMPETENCY: Selects a measure and develops a scoring method (data sheet design, instrument selection, procedure, instructions, etc.) for a specified target behavior, including identification of relevant collateral behaviors.

   CRITERION: Given a behavior to be targeted for deceleration, the trainees operationally define the targeted responses and at least two relevent collateral behaviors, specifies and defines the type of recording procedure to be used, with specific directions on how the procedure is to be used, designs a sample data sheet, and justifies the selection made.

3. COMPETENCY: Programming for behavior change. Lists the essential steps in designing and conducting behavior change activities directed toward altering a behavioral excess or deficit.

   CRITERION: (Written test) Given a brief narrative description of the problem and its history, the trainees can describe in writing the steps necessary to design a behavior change program based on positive reinforcement.

4. COMPETENCY: Writes a proposal for a behavior change program.

   CRITERION: Given a problem behavior, the trainees write a program which incorporates the following: (a) the targeted behavior stated in objective and quantifiable terms; (b) the objective or goal of the treatment program; (c) the change procedure to be employed, including the stimulus circumstances and environment under which the treatment would take place, the baseline procedures, the positive consequences to be provided, the schedule or other procedure of delivering the consequences contingently; (d) the method of measuring the behavior and consequences throughout the treatment program; (e) control or probe techniques to determine the necessity of continuing treatment; (f) the conditions under which the program would be changed or terminated.

5. COMPETENCY: Writes a plan for program generalization and maintenance.

   CRITERION: Given a written proposal for a behavior change program, the trainees write a plan for generalizing treatment gain to the unit, home or other non-treatment settings and situations.

6. COMPETENCY: Is familiar with procedures for arranging contingent relationships between targeted responses and consequences which are available in the natural environment.

   CRITERION: Given three target behaviors which are measured respectively by their duration, intensity, and frequency, the trainees will specify consequences for each which should increase the behaviors and will also specify consequences for each which should decrease the behaviors. The consequences identified should already exist in this environment or be available without substantial additional funds or resources.

7. COMPETENCY: Must be able to devise at least three alternative non-aversive treatment procedures for each of two referrals.

   CRITERION: Given two separate referrals from ward team, school or parents of a behavior to be decelerated, the trainees will briefly describe three alternative non-aversive treatment procedures, all of which can be justified as having a reasonable likelihood or reducing the behavior.

8. COMPETENCY: Communication: Written and graphic.

   CRITERION: 1. Written: explicitly describes treatment program in writing so that a naive individual who follows the program does not make errors in demonstrating the procedure. 2. Graphic: Given raw data, the trainees will design a graph, plot the data, label the ordinates and otherwise identify the variables shown in order to graphically communicate the behavioral changes.

9. COMPETENCY: Conducts reliable measurement of targeted behaviors.

CRITERION: Treatment programs include reliability checks on data required to evaluate effects.

TRAINING

1. COMPETENCY: Defines and illustrates ten procedural alternatives to the use of punishment in the control of undesired behavior.

CRITERION: (Written test) Given ten procedures (DRC, DRL, DRO, Stimulus Control, Stimulus Change, Instructional Control, Shaping, Additive Procedures, and Postive Programming) the trainees will define each and give two appropriate examples of each as they might be applied to the behavior problems of autistic individuals.

2. COMPETENCY: Trains staff to be competent in the use of discrete trial procedures.

CRITERION: Given an untrained group, the trainees will organize and implement an instructional program which results in 80% mastery of the competencies associated with discrete trial teaching.

3. COMPETENCY: Trains staff to be competent in the area of language development and training in autism.

CRITERION: Given an untrained group, the trainees will organize and implement an instructional program which results in 80% mastery of the competencies associated with language development and training.

4. COMPETENCY: Trains staff to be competent in the area of programming and program writing.

CRITERION: Given an untrained group, the trainees will organize and implement instructional program which results in 80% mastery of the competencies associated with programming and program writing.

5. COMPETENCY: Train staff to be competent in discussing the problem of autism.

CRITERION: Given an untrained group, the trainees will organize and implement an instructional program which results in 80% mastery of the competencies associated with discussing the problems associated with autism.

6. COMPETENCY: Train staff to effectively modify behavior problems using alternatives to punishment.

CRITERION: Given an untrained group, the trainees will instruct and supervise them in non-aversive intervention including the processes of target specification, behavior observation and data recording, baseline behavior analyses, reliability checks, intervention design, intervention, data summary, and behavior analysis.

7. COMPETENCY: Organize and implement "awareness" program for community groups.

CRITERION: Given a request from parent group or local or provincial agency, trainees will be able to organize and present material to community groups consisting of parents, professionals and lay people orienting and introducing them to autism, discrete trial teaching procedures, behavior management, programming and language development.

8. COMPETENCY: Recruit, screen and select training sites.

CRITERION: Upon completion of training, trainees will be able to recruit, screen and select training sites which meet criteria involving staff availability, student characteristics, and the logistics required by the training format.

9. COMPETENCY: Organize, prepare, and orient training site, staff and students for training.

CRITERION: Given a site selected for training, training team will be able to organize site and prepare staff and students for smooth implementation of training program.

10. COMPETENCY: Provides a written report for publication or presentation at a professional conference.

CRITERION: Given data from previous exercise, the trainees will write a paper suitable for publication in a professional journal or suitable for presentation at a professional conference.

AFTERWORD

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The passage of Public Law 94-142 in November 1975 signified new horizons in the provision of educational services to autistic and other handicapped children. This new, comprehensive approach to education emerged in a natural sequence of legislation, preceded by Public Law 91-230 (known as the Education of the Handicapped Act) which combined previously passed laws into one codified entity, and Public Law 93-380 which delineated due process requirements protecting the rights of handicapped youngsters. All of this legislation has supported the principle of placing handicapped children in the least restrictive educational environments and has required states not only to establish a goal of providing full educational services to handicapped children but to develop a plan setting forth how and when this goal would be achieved.

The vision of Public Law 94-142 greatly expanded the national commitment to the handicapped, and initially the potential federal investment in their education was more than $3 billion by 1982. Although authorizations do not equal actual appropriations, the clear indication of Congressional intent has been established. Unique in federal education legislation, the law has no expiration date; it is regarded as a permanent document. Nor does it simply set forth another expression of federal interest in special education; rather, it defines a specific commitment to all handicapped children, including autistic children, and it sets forth the proposition that education must be provided to handicapped persons as their fundamental right.

Since the enactment of Public Law 94-142 and the development of regulations pertaining to its implementation throughout the nation, much has been accomplished. Many challenges remain in each state, however, as full compliance with all provisions is sought. Some of the major findings noted in the August 1979 Bureau of Education for the Handicapped summary of the Act's development are as follows:

> It is estimated that almost 75 percent of the nations's handicapped school-aged children are receiving special education and related services today, compared to less than half as estimated by Congress at the time Public Law 94-142 was enacted.
>
> The number of preschool children aged 3 through 5 receiving special education has increased by over 20,000 in the past three years, a growth rate of more than 10 percent.
>
> Services such as physical and occupational therapy, adaptive physical education, and transportation have been made widely available at no cost to families. In addition, severely and profoundly handicapped children previously unserved are now being educated by our public schools.
>
> Since September 1977, approximately 40 states have changed their laws or regulations to meet the due process and protection in evaluation requirements of Public Law 94-142. The remaining states either already had comparable provisions or are in the process of changing their laws.

Recognizing the continuing need for provision of basic educational services to autistic students, under the parameters of Public Law 94-142, and sensing the staggering unmet needs of this population, the U.S. Office of Special Education has issued a Request for Proposal designed to fund projects that address these needs. Responses to this procurement request must build upon an ongoing program of those fundamental educational services that are addressed under Public Law 94-142. They must, however, expand beyond practices now known to be successful; the intent is to provide innovative services that promise new levels of achievement for these children. Projects supported under these funds must demonstrate not only an awareness of extant, effective educational services, but must also initiate approaches that chart new directions for meeting the learning needs of this population. Offerors are asked to substantiate their individual and organizational expertise to provide the "practice stretching" environments described in their proposals. Moreover, they are asked to document their ability and desire to cooperate with existing educational systems so that innovative services can be incorporated effectively, without impairing those services already supported by related state and local agencies, professionals, and others involved in educating autistic children and youth.

A rationale for the educational design selected must be provided by the offeror, with justification for the theoretical basis upon which it is to be built and description of procedures to be incorporated in its initiation and the sequential actions that will operationalize theory into practice and maintain effectiveness. In addition, there must be a comprehensive data-based evaluation plan that explores each project component, assessing its integral strength and its viability within the total project design. While considerable flexibility can be structured in the educational thrust, assurances must be provided that such flexibility addresses needs of children, as revealed through ongoing monitoring for project impact. The offeror must also describe a field-test approach to validating the project's practices and prepare documentation for its replication, in whole in in part, with reasonable assurance of success.

Although much has been accomplished under Public Law 94-142 for the benefit of all handicapped children, and although the newly issued Request for Procurement addresses the needs of this population and promises the development and eventual replication of new, exciting educational concepts, the prevailing need is for continued awareness of unmet challenges related to serving autistic students. The conference summarized in this volume has made each of us more aware of these challenges and has pointed out gaps in the dissemination of information on successful programs and findings from a number of related fields. It has also identified issues and ideas with which the Office of Special Education will be concerned in its future plans and activities. Among these are discrepancies in the application of demonstration practices in ongoing educational services, as well as recognized deficiencies in the supply of teachers and the comprehensiveness of their professional preparation.

The conference has also underscored the fact that we are still on a frontier. Effective, reality-based, and lifetime service is still an ideal, not a reality. We must resist complacency. We must reject the perpetuation in our educational system of familiar practices with unproven results. We must, instead, reassess, reconsider, redesign, and redirect our strategies to resolve multiple needs. We must be less satisfied with mediocrity in child change, teacher performance, parental acceptance and involvement. And we must accept the challenge of recognizing individual potential and apply every resource to the achievement of the maximum individual potential by each autistic child. It has been the intent of this conference and this book to point the way toward these goals.

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